RDF-E1

SERVICE MANUAL

REVISION 1 JAN. 1996

Canon
FY8-13DE-010

COPYRIGHT 1996 CANON INC.
CANON RDF-E1 REV1 JAN. 1996 PRINTED IN JAPAN

Thank you for purchasing this CD from SkydiveUSA on eBay!

We appreciate your business!

For additional Training and Service CD's covering electricity, electronics, office equipment repairs, and more visit eBay and see auctions listed by:

SkydiveUSA

I. FEATURES

1. Original size identification.

The RDF-E1 identifies the size of the original at time of pick-up, sending the information to the copier.

2. Accommodates two-sided originals.

The reversing mechanism allows the use of two-sided originals.

3. Accommodates page composition mode.

The RDF-E1 is capable of placing two small-size originals on the copyboard at the same time.

4. Accommodates manual mode.

The RDF-E1 can deal with a variety of original types, thanks to its manual feeding mode.

5. Solid construction.

The increase in the number of stays inside the machine and the use of strong side plates have led to a solid overall construction, preventing warping of the body.

COPYRIGHT © 1996 CANON INC.

II. SPECIFICATIONS

Item	Specifications			Remarks
Original pick-up	Auto pick-up/delivery			
Original type	Sheet (50 to 200 g/m^2; if manual, 38 g/m^2 min.)			
Original size	A5 (STMT) to A3 (11"x17") 139.7 to 432 mm long, 182 to 297 mm wide			
Original orientation	Tray	Face up		Keep the 1st page the topmost page of a stack.
	Manual	Face down		
Original reference	Tray	Center		
	Manual	Rear		
Original processing mode	One-sided original to one-sided copy			For two-sided copying, as per the host copier.
	Two-sided original to one-sided copies			
Pick-up tray	100 (small size)	Stack of black-and-white/color originals	50 (small size)	See Note; of 81.4 g/m^2 paper.
	50 (large size)		25 (large size)	
Original size identification	Provided			
Different size originals identification	Provided (however, for sheets of the same configuration)			
Original density identification (AE)	Provided			
Remaining original identification	Provided (in conjunction with the host copier)			
Page layout	Provided			
Manual mode	Provided (single)			
Control panel	Not provided			
Dimensions	643 (W) × 539 (D) × 173.5 (H) mm 25.3 (W) × 21.2 (D) × 6.8 (H) in.			
Weight	24.0 kg (approx.; 52.92 lb)			
Power supply	DC 24V (from the copier)			NDS xxxxx PDS xxxxx PDT xxxxx NDR xxxxx
Maximum power consumption	80W or less			

Note:

What is referred to as *small* size includes A4, A4R, B5, B5R, A5, LTR, LTR-R, and STMT; what is referred to as *large* size includes A3, B4, 11"x17".

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.1 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

Item	Specifications		Remarks
Open/close angle	15°±5° or less	Free fall	
	15°±5° to 50°+10°/−5°	Free stop	
	50°+10°/−5° to 86°±3°	Manual	
Original feeding speed	Pick-up	150 to 500 mm/sec	
	Belt feeding	1000 mm/sec	
	Delivery	1000 mm/sec	
	Reversal	1000 mm/sec	
Original processing speed	A4/LTR one-sided original	One-sided : 0.5sec or less/ High speed mode : 0.35 sec or less	The times represent original replacement during continuous copying and excludes retry operations.
	A4/LTR (page composition)	6.0 sec or less	
Environment	As per copier		

Note 1:

The following types of originals should not be use:

- carbon-backed
- pasted or bound
- torn, holed, damaged
- curled, wrinkled, bent (excessive)

Note 2:

You must remove any curls or creases before use.

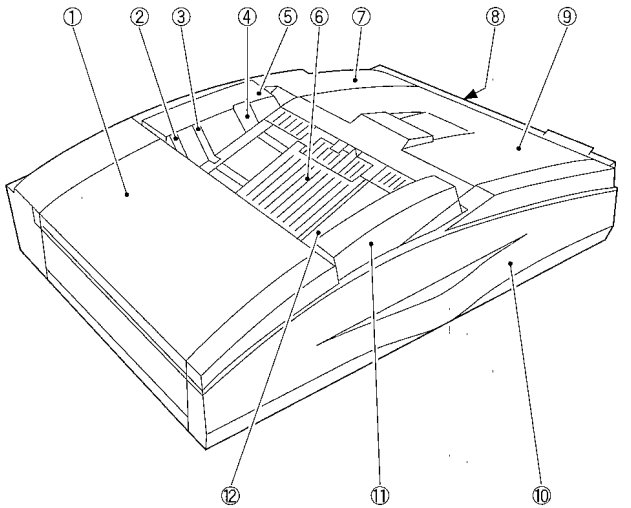
Reference:

To protect the originals, dot not use the same original more than 30 times (15 times if for two-sided or page composition mode).

COPYRIGHT © 1996 CANON INC.

III. NAMES OF PARTS

A. Exterior View

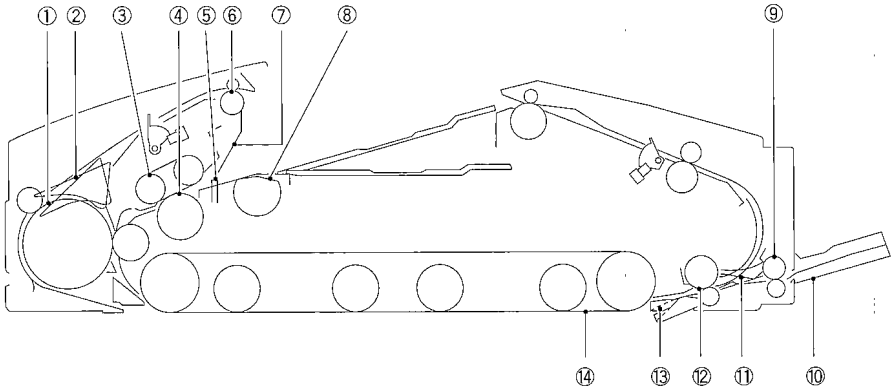


① Left cover
② Recirculating lever 2
③ Recirculating lever 1
④ Original Set indicator
⑤ Side guide (rear)
⑥ Sub tray
⑦ Rear cover
⑧ Manual feed tray
⑨ Right cover
⑩ Front cover
⑪ Side guide (front)
⑫ Original tray

Figure 1-301

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

B. Cross Section



① Reversing roller
② Paper deflecting plate
③ Separation belt 1 (left)
④ Feeding roller 1 (left)
⑤ Stopper 1
⑥ Delivery roller
⑦ Paper retaining plate
⑧ Pick-up roller 1
⑨ Manual feeding pick-up roller
⑩ Manual feeding tray
⑪ Manual feeding paper deflecting plate
⑫ Manual feeding registration roller
⑬ Paper base
⑭ Feeding belt

Figure 1-302

COPYRIGHT © 1996 CANON INC.

C. Routine Maintenance by the User

Advise the user to clean the following parts at least once a week:

1. **Copyboard Glass**
   Wipe it with a cloth moistened with water or alcohol; then, dry wipe it.
2. **Feeding Belt**
   Wipe it with cleaning tissue moistened with water.
3. **Others**
   If any parts of the RDF-E1 is soiled, wipe the parts with a cloth moistened with a solution of mild detergent.

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

IV. OPERATING THE RDF-E1

A. Making copies

1. Basic Operation

1) Adjust the slide guide to the size of the originals.
2) Put the stack of originals into order, and place it on the original tray face up.

Note:
Make sure that the originals are of the same size.
Place the originals so that their top is toward the rear of the original tray, regardless of orientation.
Place A5 originals only in vertical orientation.
Place B5 or A4 originals in either vertical or horizontal orientation.

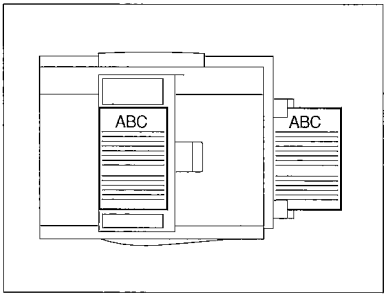


Figure 1-401

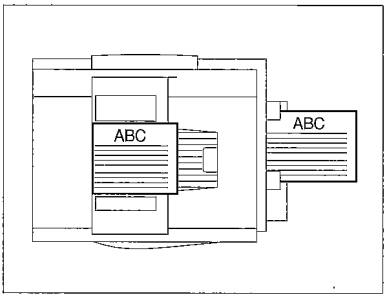


Figure 1-402

Caution:
Do not pull out the originals or add originals during copying operation.

Note:
Make sure the number of originals you are placing does not exceed the following:
if A3/B4, 50 originals (80 g/m²)
if A4/B5/A5, 100 originals (80 g/m²)

3) Press the START key.

COPYRIGHT © 1996 CANON INC.

2. Using the Manual Feed Tray

1) Open the manual feed tray.
2) Set the appropriate copying mode.
3) Adjust the width of the guide to suit the size of the original.

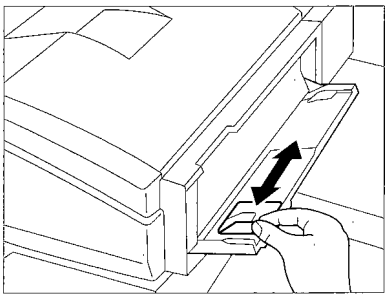


Figure 1-403

4) Place a single original face down. (Copying starts automatically as soon as the original is pulled in.)

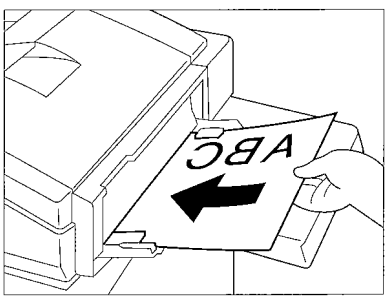


Figure 1-404

Note:
If the original is curled, remove any curling before inserting it.
The original is returned to the manual feed tray when copying finishes.

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

B. Alarm Indications and Actions to Take

If an original jams in the feeder assembly, go through the following steps to remove any originals from the feeder and the copyboard glass.

1) Remove the originals from the copyboard glass.

Note:
Depending on how the originals are being fed and the size of the originals,

- if A4 vertical/B5 vertical originals are fed, start with step 2).
- if A4 horizontal/B4/A3 originals are fed, start with step 4.
- if the manual feed tray is used, start with step 8).

2) Fully open the right cover, and remove the original jam.
3) After removing all original jams, close the right cover.
4) Fully open the left cover, and remove the original jam.
5) Open the inside cover, and remove the original jam.
   When you have removed all original jams, close the inside cover and the left feeder cover.

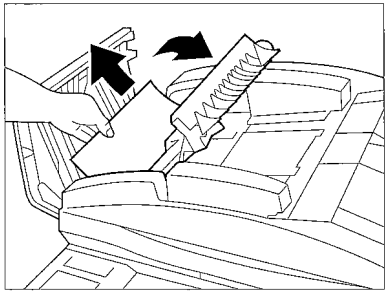


Figure 1-405

6) Open the feeder.
7) Holding the center of the left cover, open it; then, remove the original jam.

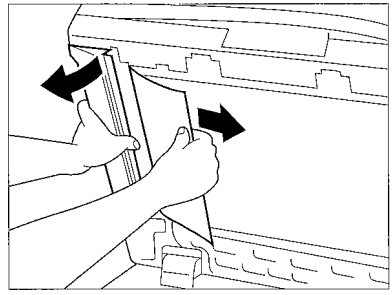


Figure 1-406

8) Remove the original from the copyboard glass.
9) Holding the center of the right cover, remove the original.

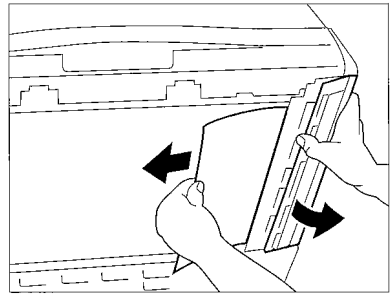


Figure 1-407

10) Close the feeder

Note:
At times, the Jam message remains on the display; if this is the case, look for an original jam once again.

11) When the message 'Put Originals Back and Press Start Button' appears on the display, put the stack of originals back on the original tray making sure that the first page is the top of the stack.
12) Press the START key.

COPYRIGHT © 1996 CANON INC.

I. BASIC CONSTRUCTION

A. Electrical Circuitry

The RDF-E1's electrical mechanisms are controlled by the RF controller PCB, which is a microprocessor.

The microprocessor reads input signals from sensors and signals from the copier and generates signals to drive motors, solenoids, clutches, LEDs and other DC loads at such times as programmed initially.

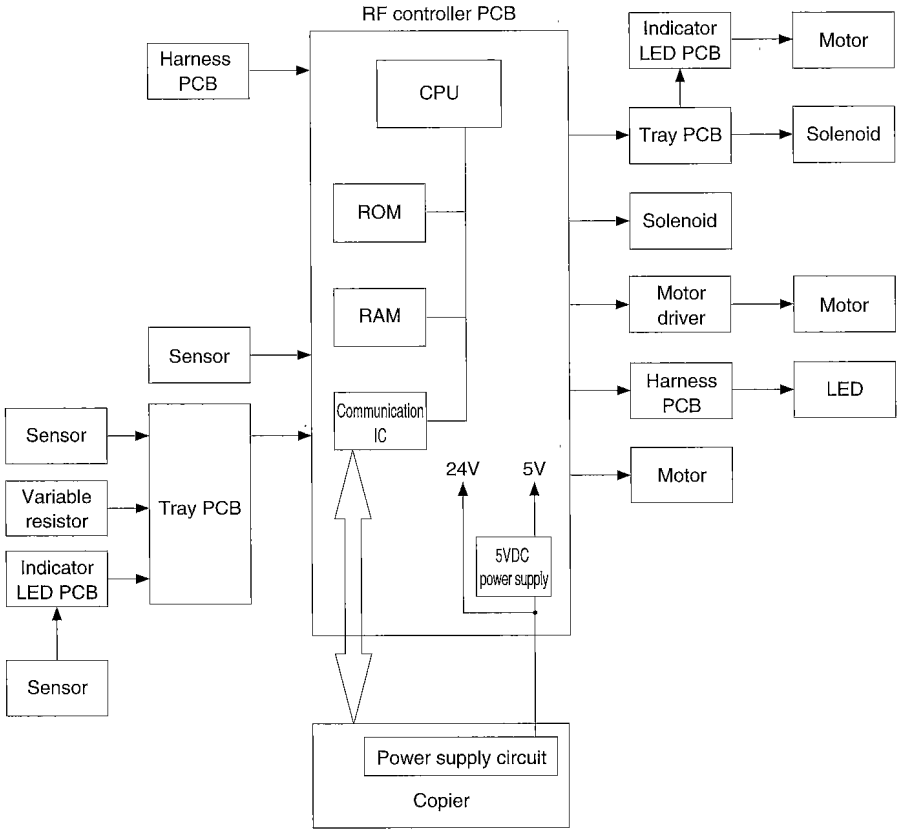


Figure 2-101

COPYRIGHT © 1996 CANON INC.

B. Communicating with the Copier

The operation modes selected on the copier are sent to the RF by IPC communication.

The status of feeding operation is communicated to the copier by means of appropriate signals; if an error occurs in the IPC communication, the copier's self-diagnosis mechanism turns on to indicate 'E400' on the control panel.

The belt motor clock signal (BLTCK) is sent by the RF to the copier over exclusive lines.

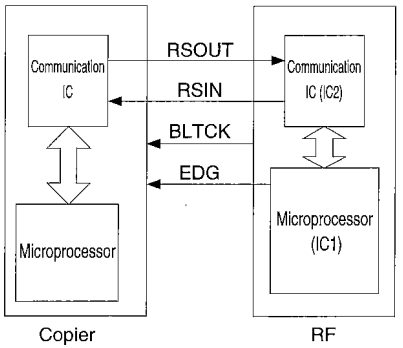


Figure 2-102

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

C. Inputs to the RF Controller PCB

1. Inputs to the RF Controller PCB (1/7)

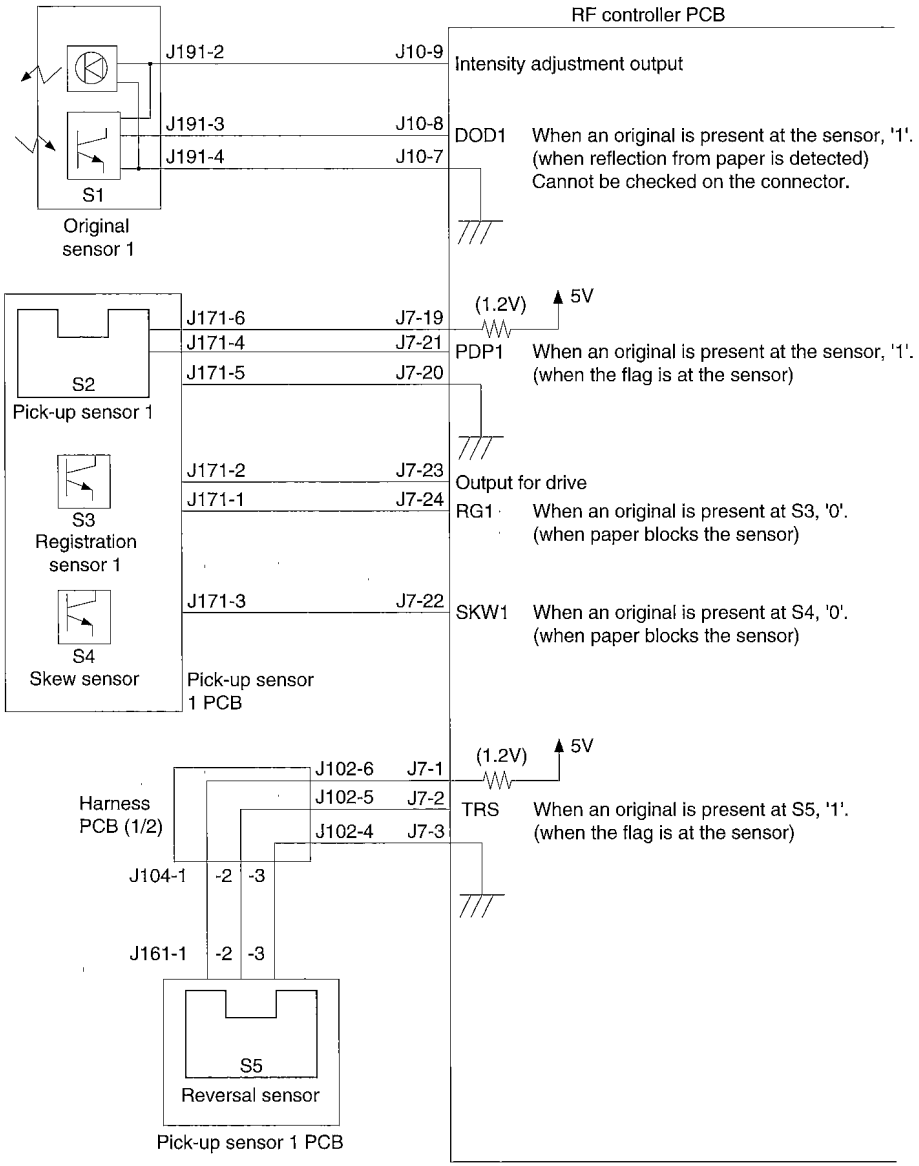


Figure 2-103

COPYRIGHT © 1996 CANON INC.

2. Inputs to the RF Controller PCB (2/7)

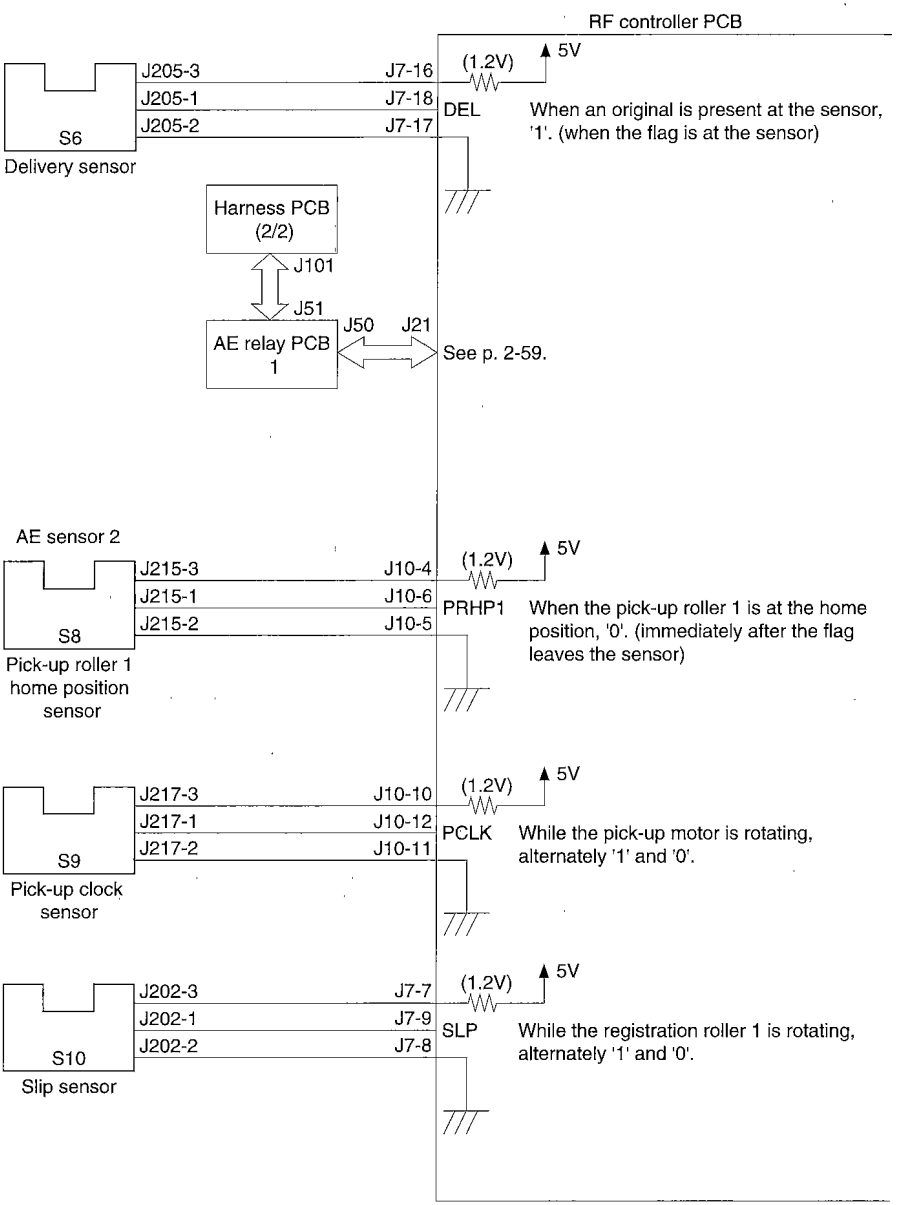


Figure 2-104

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

3. Inputs to RF Controller PCB (3/7)

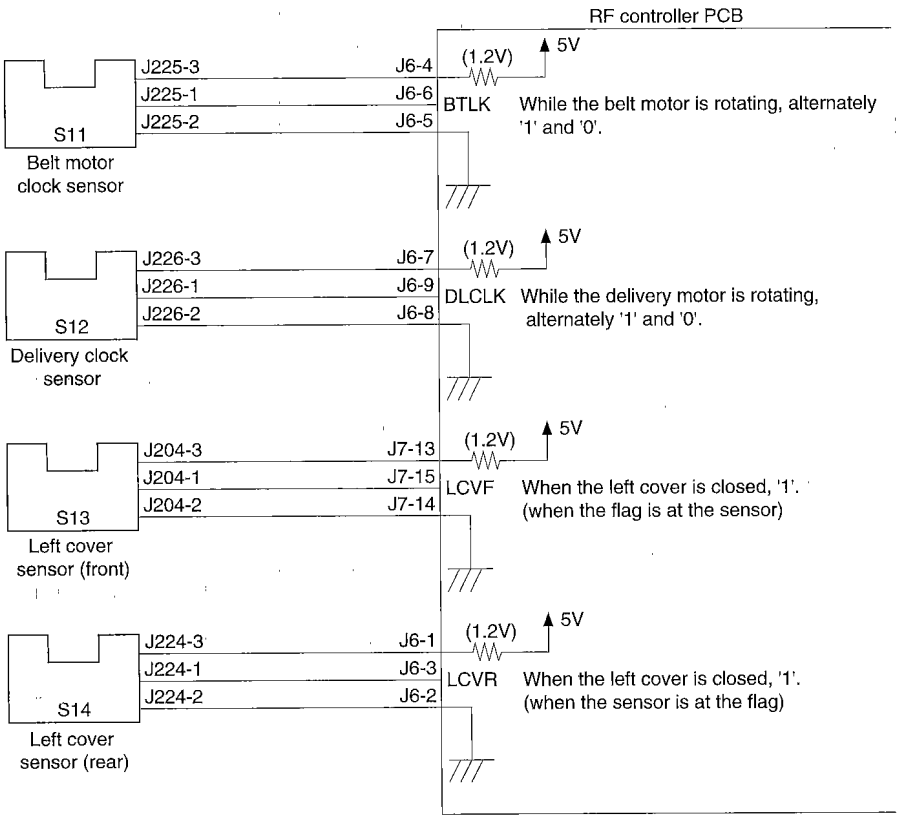


Figure 2-105

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

4. Inputs to the RF Controller PCB (4/7)

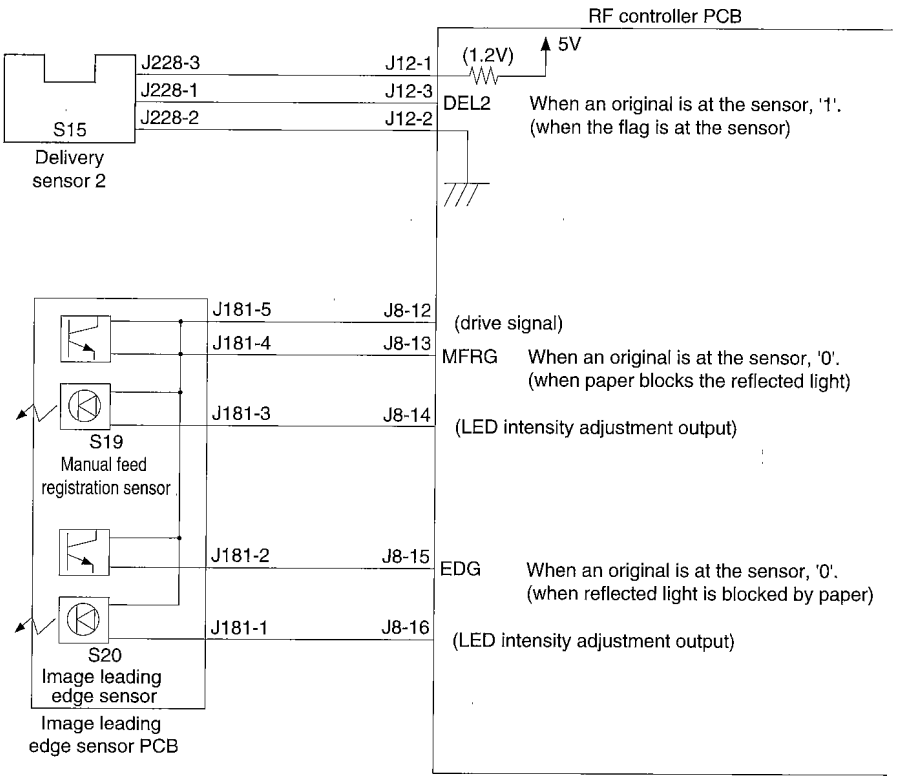


Figure 2-106

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

5. Inputs to the RF Controller PCB (5/7)

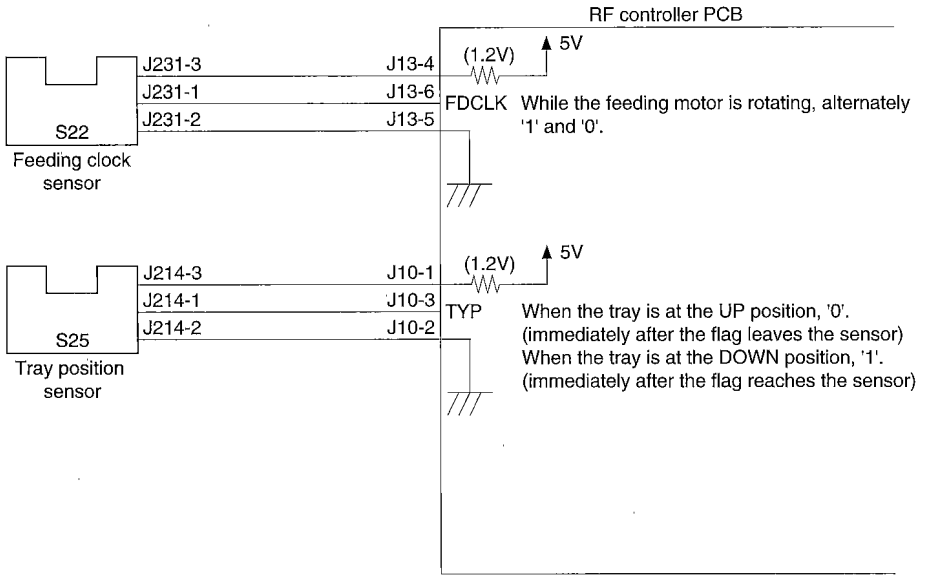


Figure 2-107

COPYRIGHT © 1996 CANON INC.

6. Inputs to the RF Controller PCB (6/7)

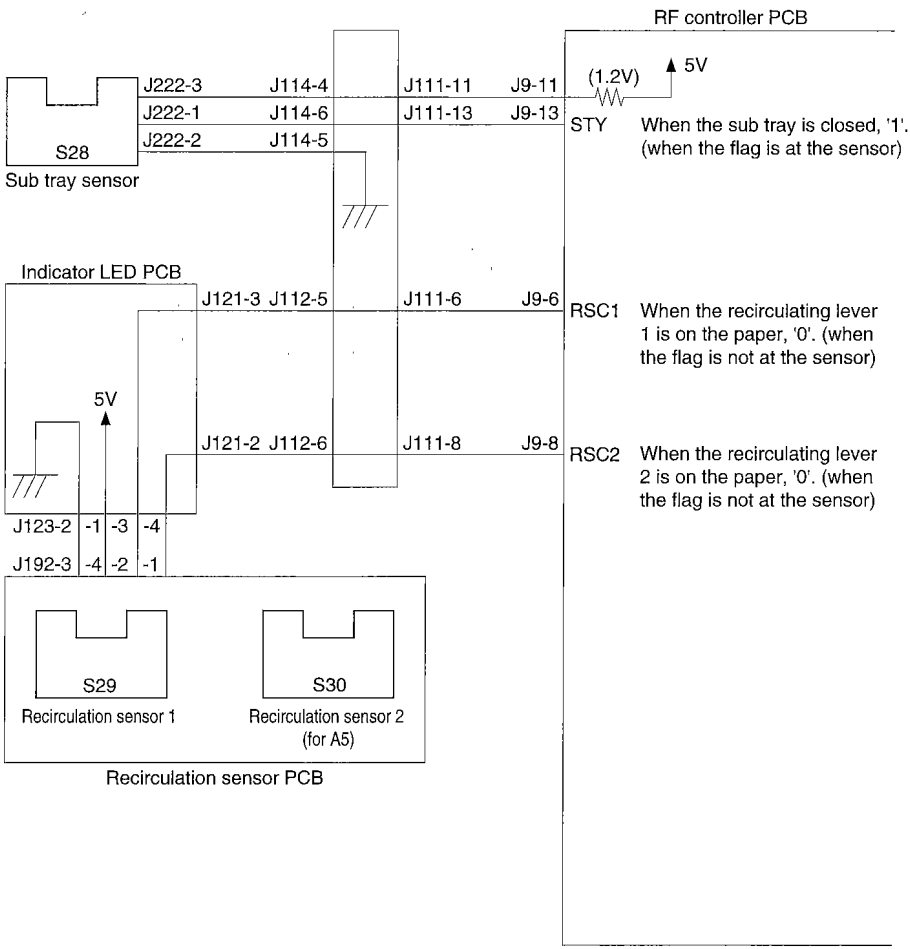


Figure 2-108

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

7. Inputs to the RF Controller PCB (7/7)

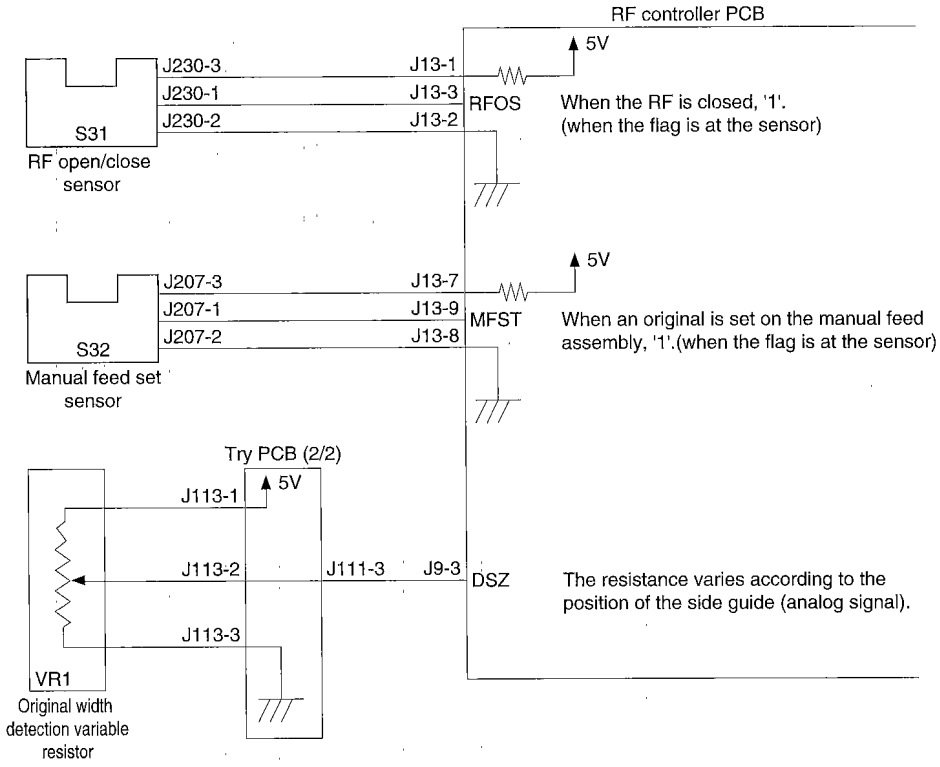


Figure 2-109

COPYRIGHT © 1996 CANON INC.

D. Outputs from the RF Controller PCB

1. Outputs form the RF Controller PCB (1/4)

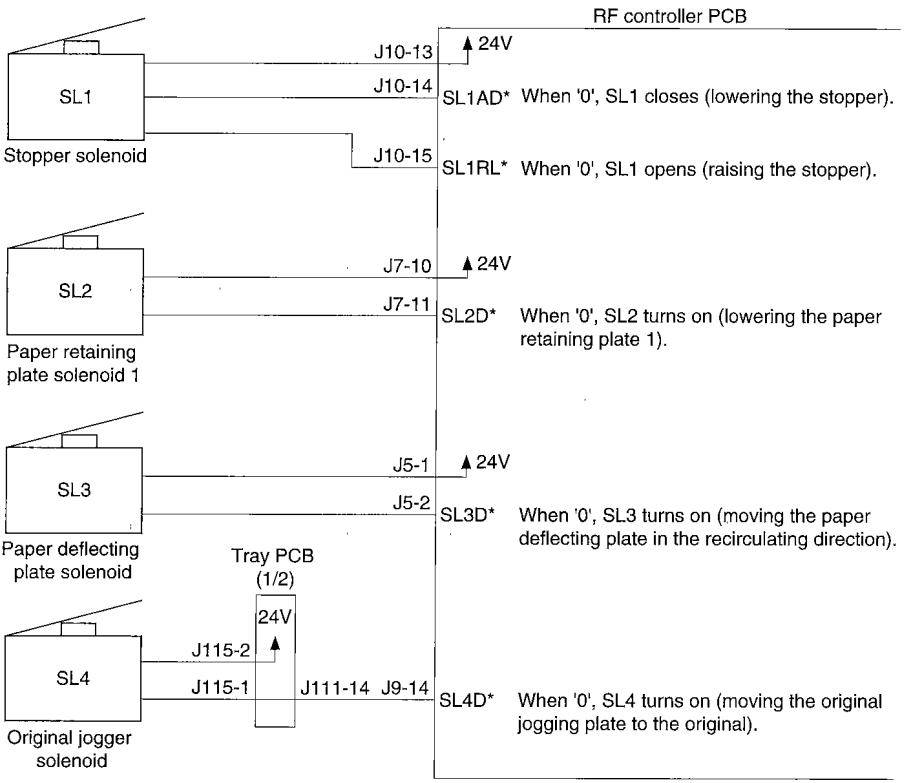


Figure 2-110

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

2. Outputs from the RF Controller PCB (2/4)

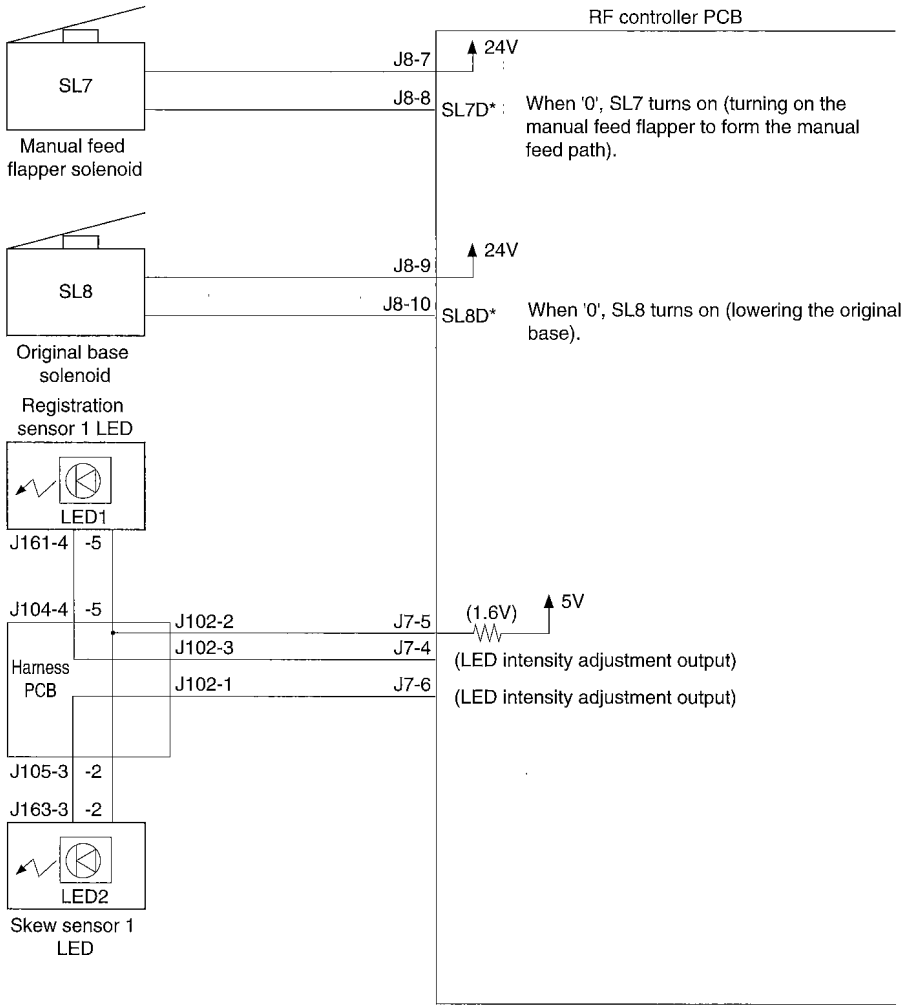


Figure 2-111

COPYRIGHT © 1996 CANON INC.

3. Outputs from the RF Controller PCB (3/4)

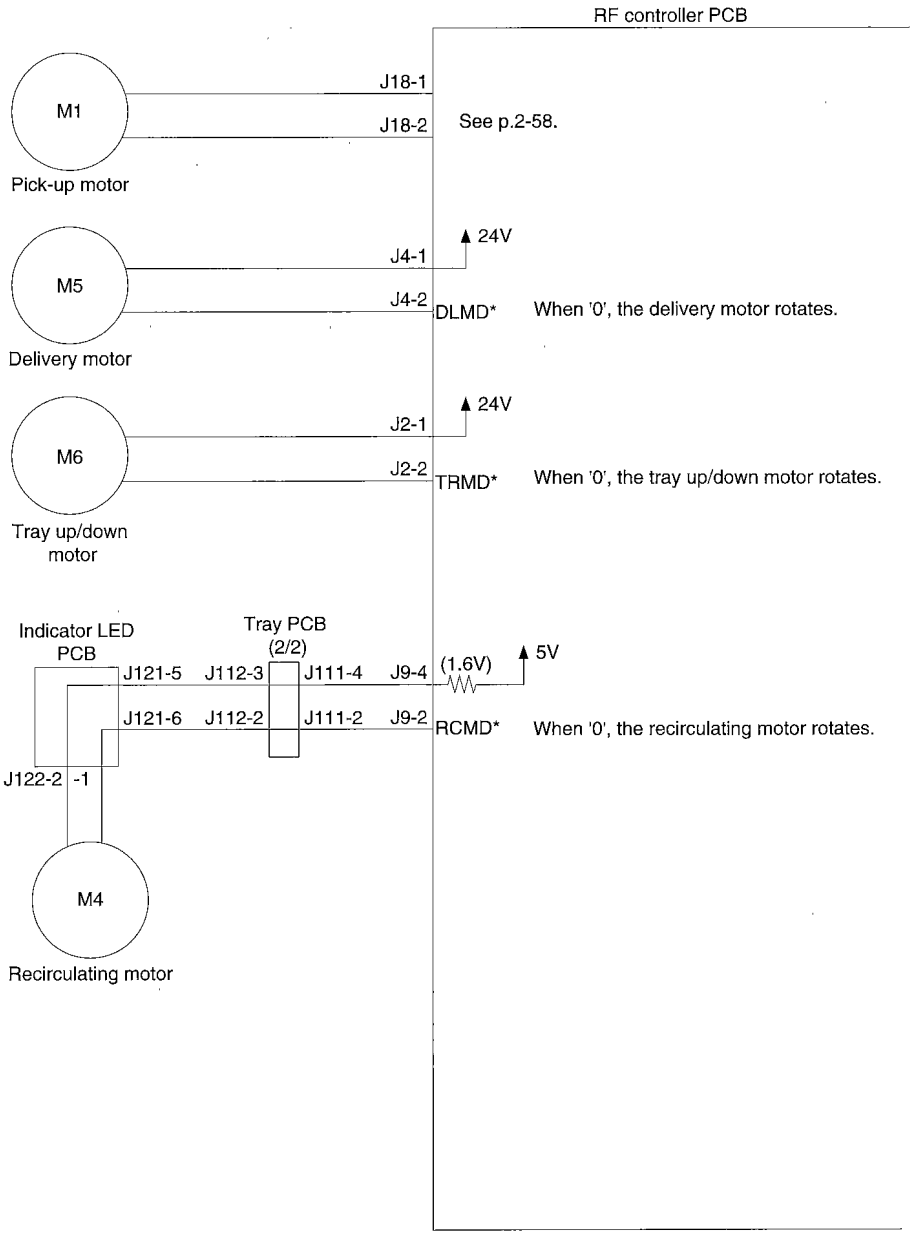


Figure 2-112

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

4. Outputs from the RF Controller PCB (4/4)

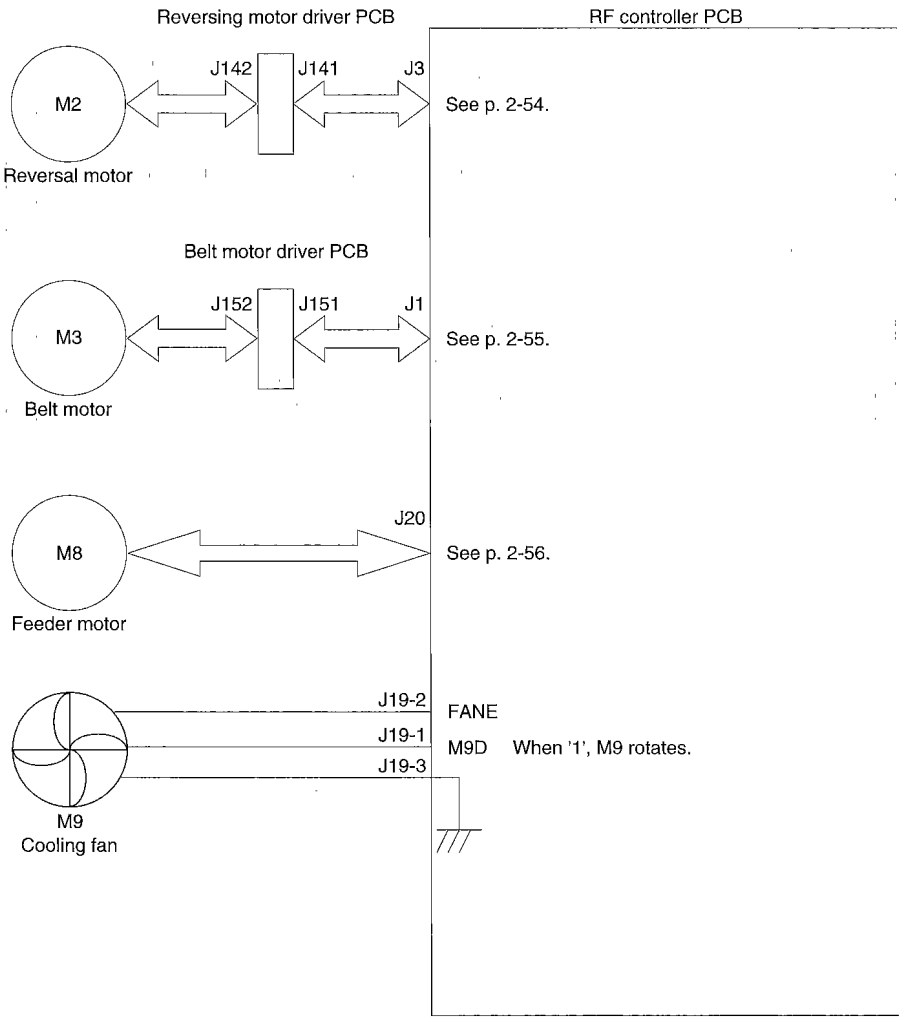


Figure 2-113

COPYRIGHT © 1996 CANON INC.

II. BASIC RF OPERATIONS

A. Outline

The RDF-E1 uses eight motors whose functions are as follows:

No.	Motor	Description
M1	Pick-up motor	Drives the separation belt, pick-up roller 1, and feeding roller 1
M2	Reversing motor	Drives the reversing roller and registration roller 1
M3	Belt motor	Drives the feeding belt and manual feed registration roller
M4	Recirculating motor	Drives the recirculating levers 1 and 2
M5	Delivery motor	Drives the delivery roller
M6	Tray up/down motor	Drives the original tray (raises)
M8	Feeder motor	Drives the delivery roller 2 and manual feed roller

Table 2-201

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

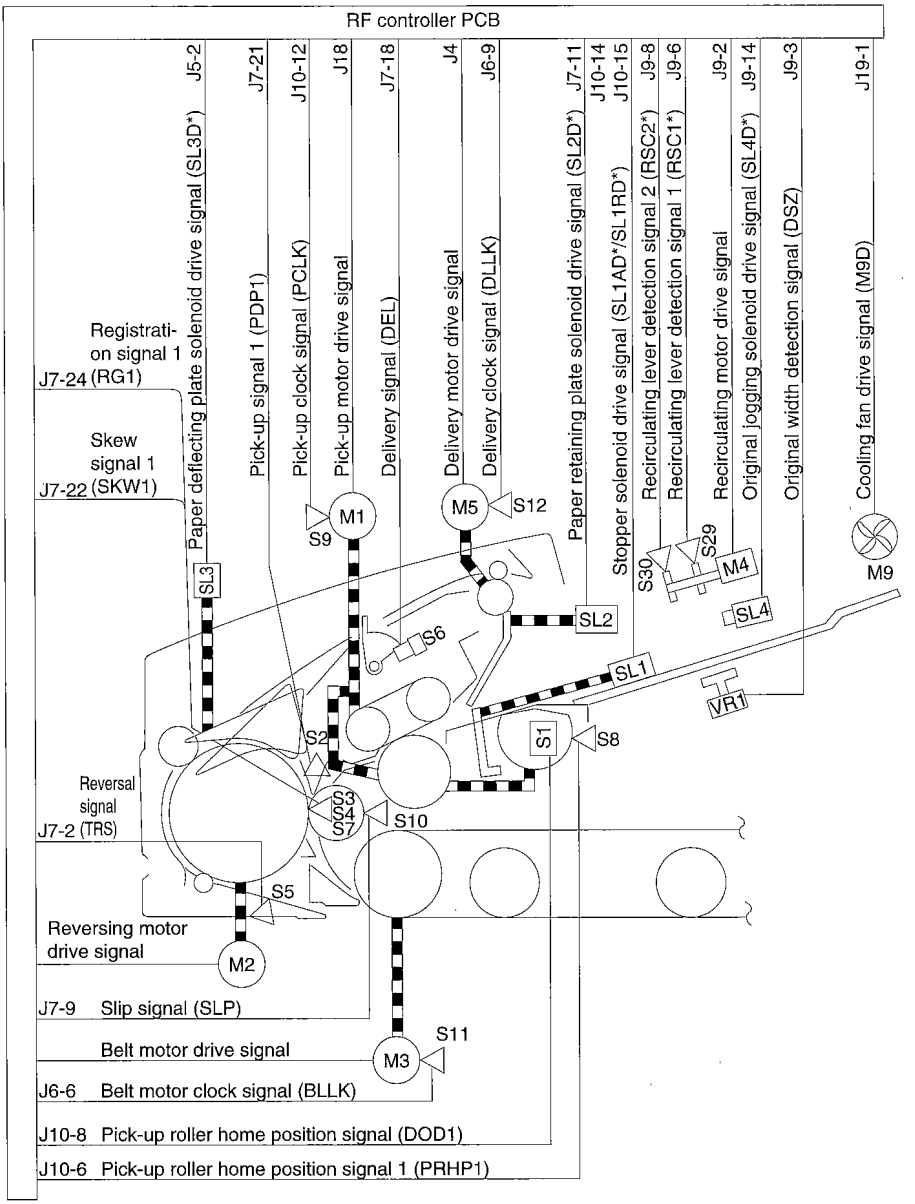


Figure 2-201

COPYRIGHT © 1996 CANON INC.

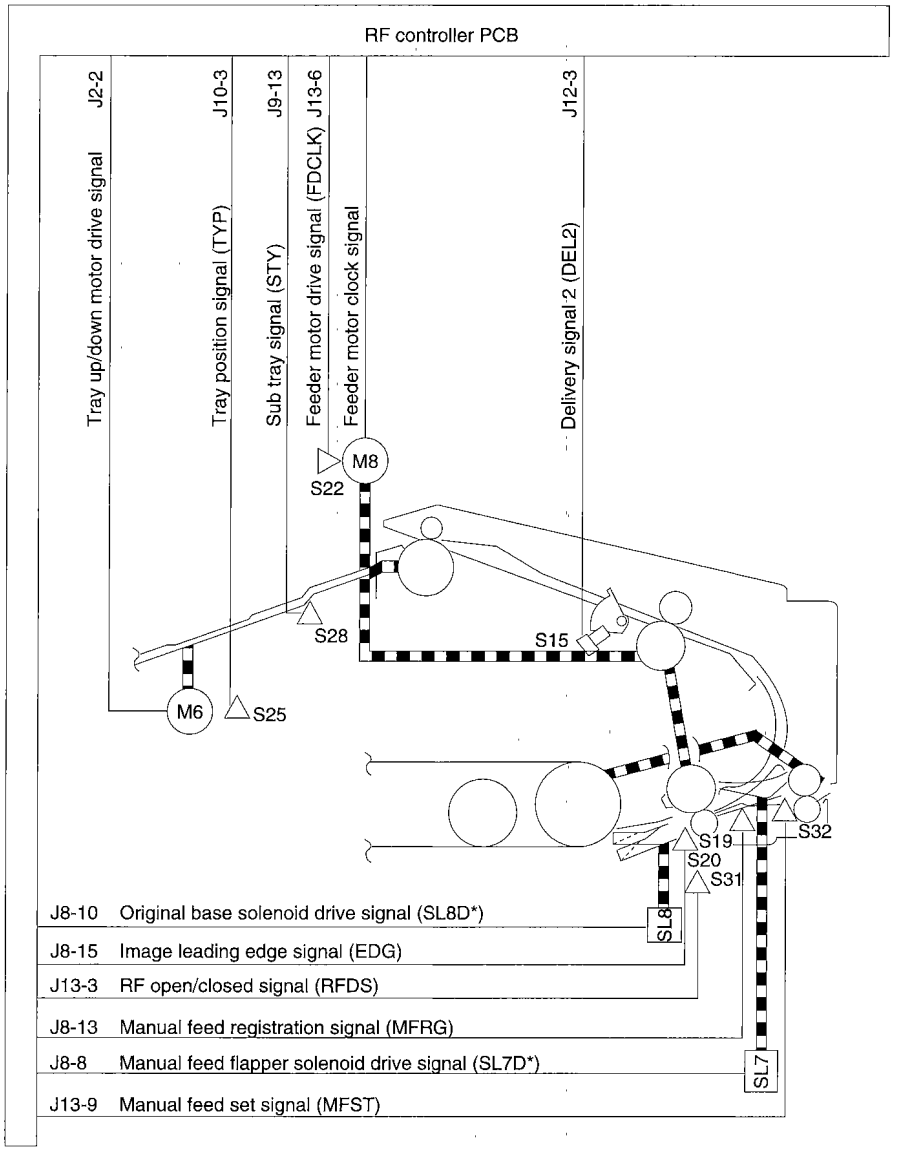


Figure 2-202

COPYRIGHT © 1996 CANON INC.

1. High-Speed Copying Mode

In high-speed copying mode, the stack of originals on the original try is picked up starting with the bottommost page (last page) first and is sent to the copyboard glass.

When the 1st original is set, the original tray is lowered in preparation for delivery. After one side of the original is copied, the 2nd original kept in wait is moved to the copyboard glass; at this time, the 1st original is still on the copyboard glass. This series of operations is repeated to deliver the originals to the original tray.

Conditions for High-Speed Copying Mode

- the original size is A4, B5, or LTR, and the originals are fed horizontally (two originals or more).
- the sub tray is closed.

The mode is activated when both of these conditions exist.

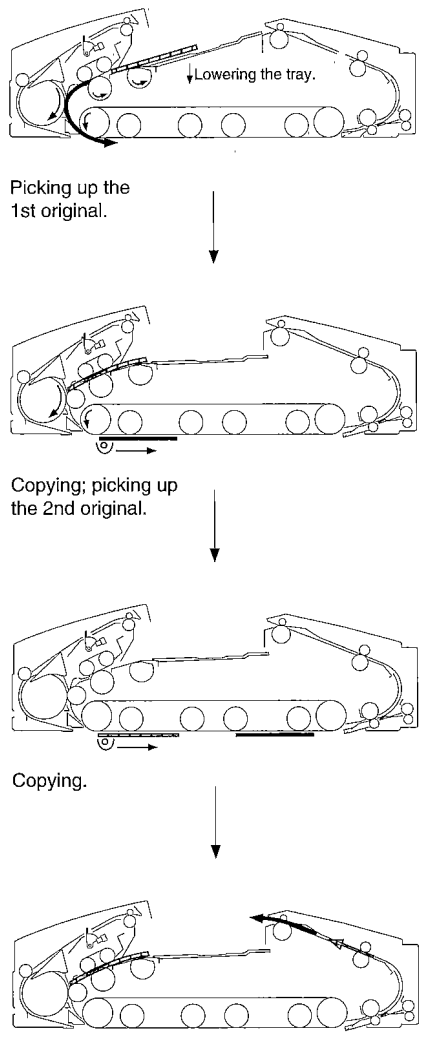

Lowering the tray.
Picking up the 1st original.
Copying; picking up the 2nd original.
Copying.
Delivering the 1st and 2nd originals.

Figure 2-203 One-Sided Original Mode 1

COPYRIGHT © 1996 CANON INC.

2. One-Sided Original Mode

In one-sided original mode, the stack of originals on the original tray is picked up starting with the bottommost page (last page) and is set on the copyboard glass.

After one side of the original is copied, the original on the copyboard is moved using the path shown in the diagrams.

Conditions for One-Sided Original Mode

- the original size is A4, B5 or LTR, and the originals are not fed horizontally.
- the sub tray is open.

The mode is activated when either or these conditions is met.

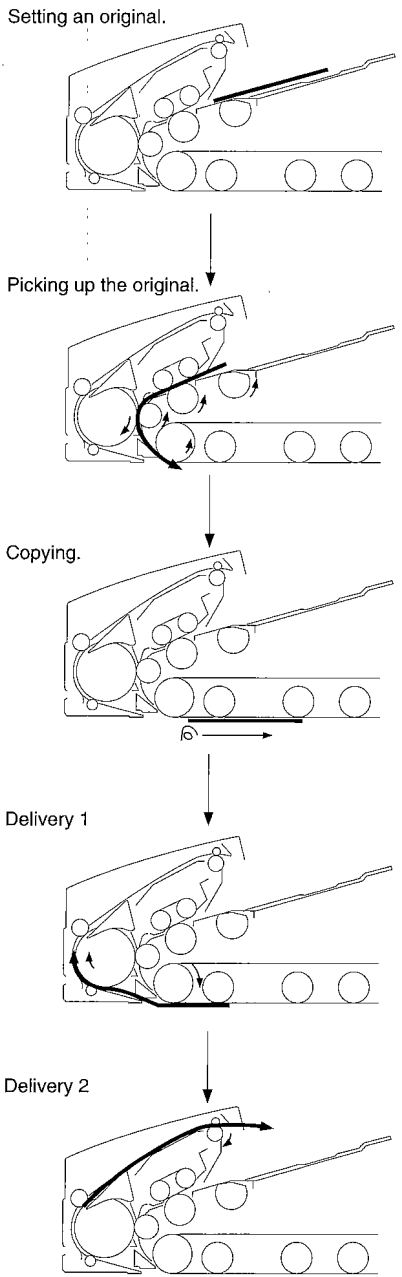


Figure 2-204 One-Sided Original Mode

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

3. Two-Sided Original Mode 1

If the face (1st side) and the back (2nd side) of an original is to be copied, the original is picked up using the path for pick-up 1 and reversed inside the RF for copying its both sides.

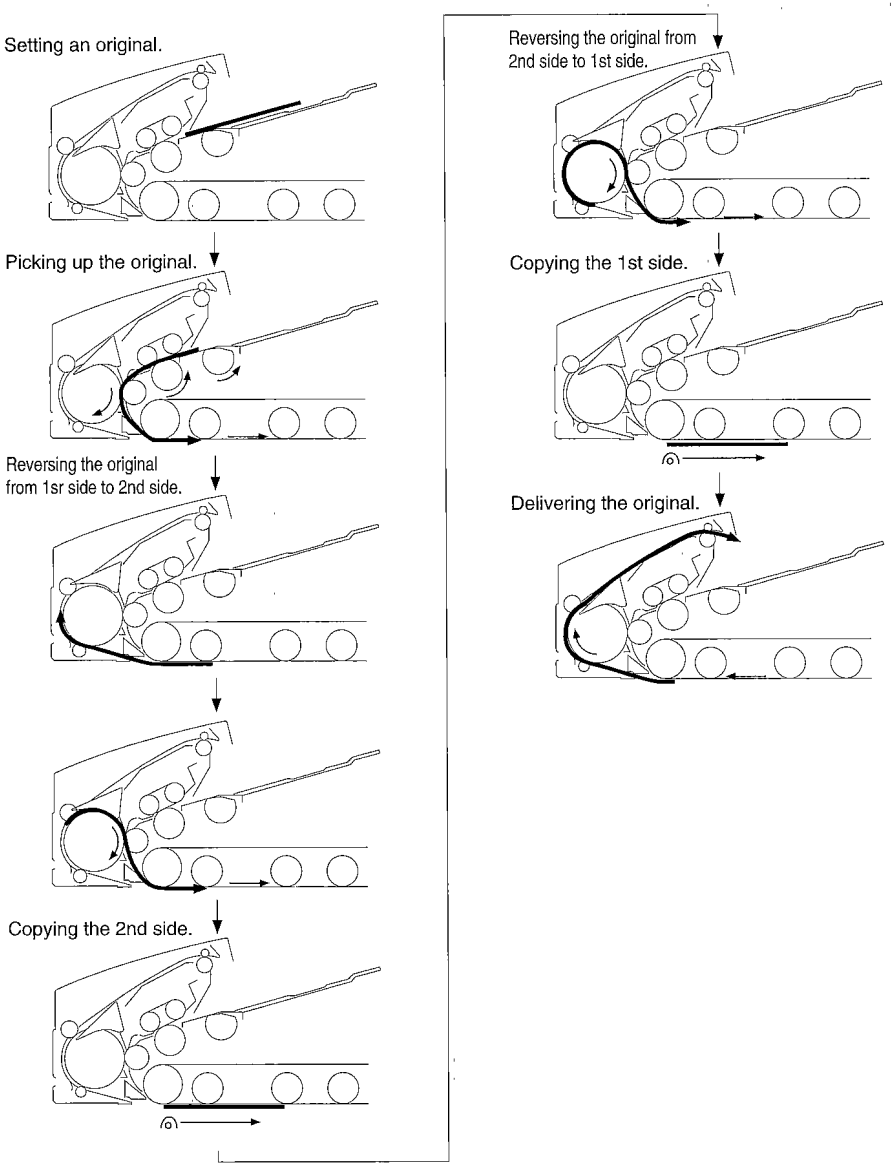

Setting an original.
Picking up the original.
Reversing the original from 1sr side to 2nd side.
Copying the 2nd side.
Reversing the original from 2nd side to 1st side.
Copying the 1st side.
Delivering the original.

Figure 2-205 Two-Sided Original Mode

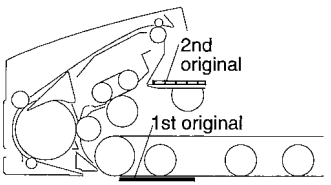
COPYRIGHT © 1996 CANON INC.

4. Page Composition Mode 1

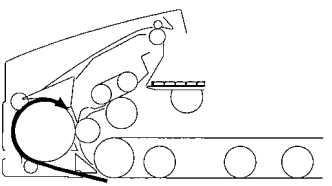
In page composition mode 1, two originals are picked up and placed on the copyboard glass for copying. See Table 2-202 for the sizes of originals that may be used for the mode.

AB	INCH
A5	STMT
B5	LETTER
A4	

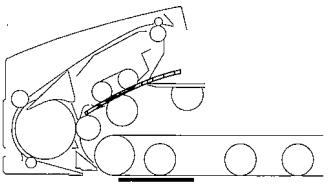
Table 2-202



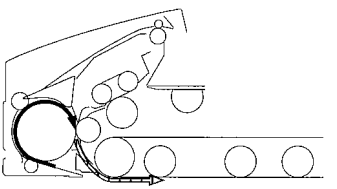
Picking up the 1st original.



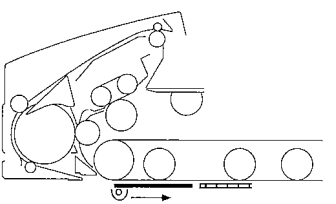
Reversing from 1st side to 2nd side.



Picking up the 2nd original.



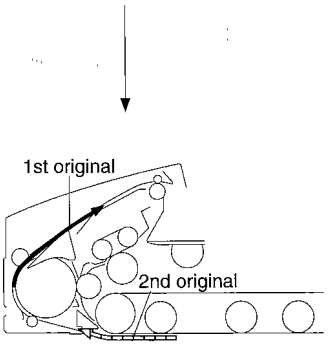
While reversing the 1st original, feeding the 2nd original, thereby reordering the originals.



Copying the original.

Figure 2-206

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)



After delivering the 1st original, delivering the 2nd original.

Figure 2-207

COPYRIGHT © 1996 CANON INC.

5. Manual Feed Mode

In manual feed mode, an original placed on the manual feed tray is picked up and placed on the copyboard; after copying, the original is delivered back to the manual feed tray.

In this mode, no more than one original may be used; keep in mind that the original must be placed face down.

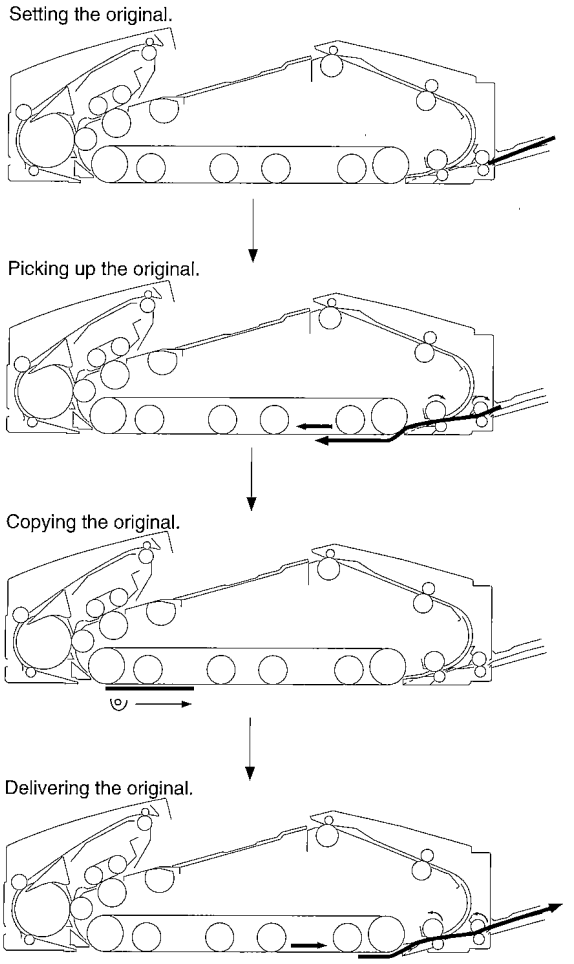


Figure 2-208 Manual Feed Mode

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

B. Detecting the Originals

1. Outline

The RDF-E1 detects originals in the following four ways:

① identifies the presence/absence of an original on the original tray.
② identifies the size of the original on the original tray.
③ identifies the number of originals to check whether all originals on the original tray have been copied.
④ identifies the presence/absence of an original on the manual feed tray.

2. Checking the presence/Absence of an Original on the Original Tray

The presence/absence of an original on the machine's original tray is checked by the original sensor (S1).

When an original is set on the original tray, the light from the LED of the sensor hits the original, and the reflected light causes the original detection signal (DOD) to be generated.

The LED on the display LED PCB turns on when an original is detected.

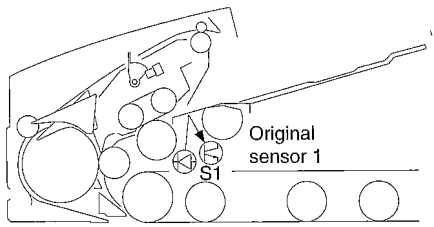


Figure 2-209 Locations of the Original Sensor

COPYRIGHT © 1996 CANON INC.

3. Identifying the Size of Originals

The size of an original is identified in relation to vertical direction (feeding direction) and horizontal direction.

a. Identifying the Size in Vertical Direction (feeding direction)

The size in vertical direction is identified based on the time during which the original remains over the registration sensor 1 (S3) while the document is being moved.

The accuracy of size identification in this direction is ±10 mm.

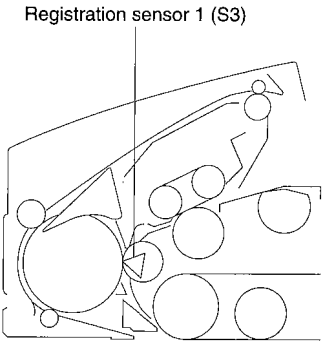


Figure 2-210

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

b. Identifying the Size in Horizontal Direction

The size in horizontal direction is identified in relation to the original width detecting volume (VR1), which is attached to the original tray, as it moves in conjunction with the side guide. (Figure 2-211)

The accuracy of identification in this direction is ±2 mm.

Based on the results of identification for both vertical and horizontal directions, the copier decides on a specific size from its default sizes.

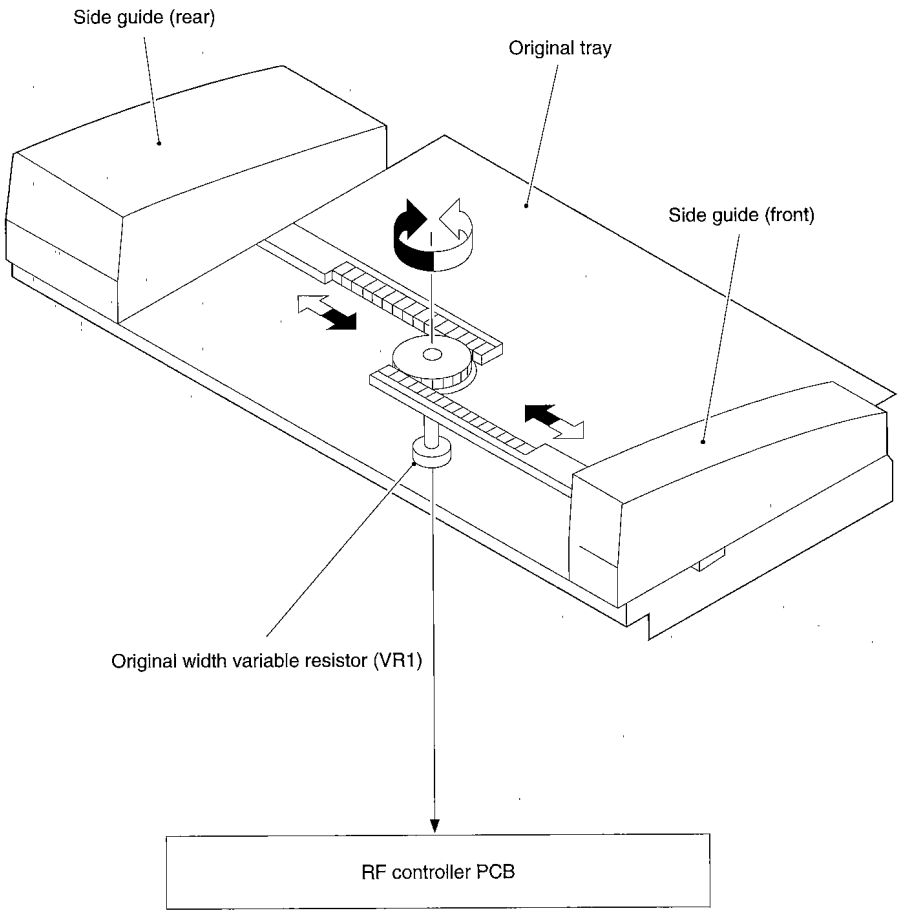


Figure 2-211

COPYRIGHT © 1996 CANON INC.

Default size	Vertical length	Horizontal length
B5R	257mm	177~187mm
A5	148.5mm	205~215mm
A4R	330mm	
Foolscap	330mm	
B5	182mm	252~262mm
B4	364mm	
Computer paper	381mm	274~284mm
A4	210mm	292~302mm
A3	420mm	

For the horizontal length, 'a fixed length ±5 mm' is identified as a default; for the vertical direction, 'a default -10, +10 mm' is identified as a default length; others are identified as non-default.

Table 2-203 AB Configuration

Default size	Vertical length	Horizontal length
STMT H	140mm	211~221mm
LTRR	279mm	
Foolscap	330mm	
LGL	356mm	
LTR	216mm	274~284mm
Computer paper	381mm	
11517	432mm	

For the horizontal length, 'a fixed length ±5 mm' is identified as a default; for the vertical direction, 'a default -10, +10 mm' is identified as a default length; others are identified as non-default.

Table 2-204 Inch Configuration

Default size	Vertical length	Horizontal length
B5R	257mm	177~187mm
A5	148mm	205~213mm
A4R	297mm	
STMT H	140mm	214~221mm
LTRR	279mm	
Foolscap	330mm	
LGL	356mm	
B5	182mm	252~262mm
B4	364mm	
LTR	216mm	274~284mm
Computer paper	381mm	
11517	432mm	
A4	210mm	292~302mm
A3	420mm	

For the horizontal length, 'a fixed length ±5 mm' is identified as a default; for the vertical direction, 'a default -10, +10 mm' is identified as a default length; others are identified as non-default.

Table 2-205 AB/Inch Configuration

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

4. Identifying the Number of Originals

a. Identifying the Last Original

The RDF-E1 uses the same tray for pick-up and delivery of originals, necessitating distinction between originals which have been copied and which are to be copied.

The recirculating lever is set on the topmost original before picking any original; the recirculating lever will fall onto the original tray when all originals have been picked up; the condition enables the recirculation sensors 1 and 2 (S29, S30) to identify the pick-up of the last original, leading to the generation of the recirculating lever detection signals 1 and 2 (RSC1, RSC2).

The RDF-E1 is equipped with two recirculating lever and two recirculating sensors; this way, the levers cannot fall outside an original with a short feeding direction (B5, for example; Figure 2-213).

The levers are driven by one motor (M4).

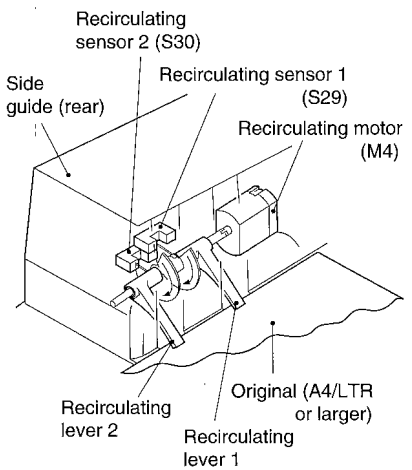


Figure 2-212

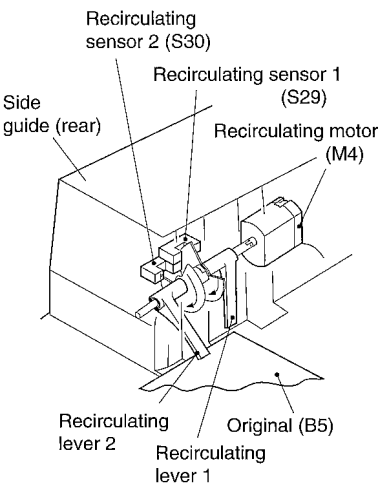


Figure 2-213

COPYRIGHT © 1996 CANON INC.

b. Counting the Originals

In 'one-sided original to one-sided copy', 'two-sided original to one-sided copies', or 'two-sided original to two-sided copy' mode, there is no need for counting the originals, and the originals on the tray are picked up in sequence.

In the case of 'one-sided originals to two-sided copy', however, it is important to find out whether there is an odd or even number of originals.

To this end, the originals are picked up and fed by the RF on its own without involving copying operation to count the number of originals.

Reference:

The RF picks up the originals starting with the last page for copying. For this reason, to copy the 1st page on the face of a copy in 'one-sided originals to two-sided copy', it is important to decide whether the last page should be copied on a face or a back based on whether there is an odd or even number of originals. If copying is started indiscriminately as in the case of Figure 2-214, the topmost original will be copied on a back if there is an odd number of originals.

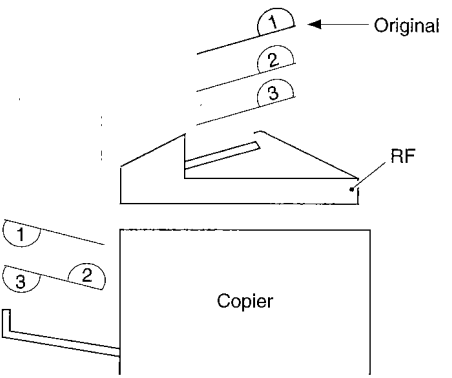


Figure 2-214

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

C. Picking Up Originals

1. Jogging the Originals

The original jogging solenoid (SL4) on the original tray is turned on and off to operate the original jogging plate to keep the originals in order, thereby preventing them from moving askew. In addition, the original jogging plate is also operated each time an original is delivered. (Figure 2-215)

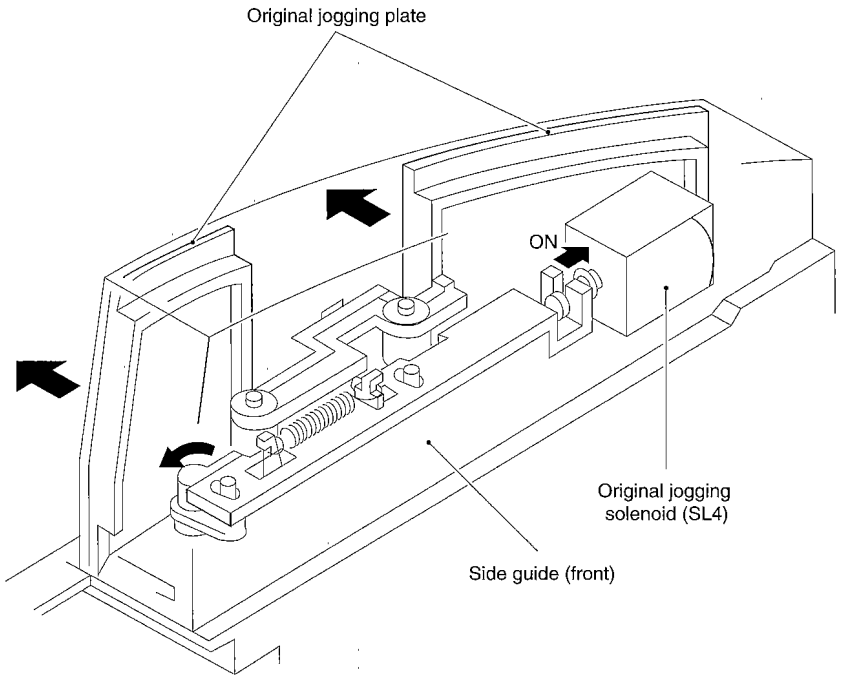


Figure 2-215

COPYRIGHT © 1996 CANON INC.

2. Raising the Original Tray

The original tray is lowered when picking up an original.

After copying is done and all originals have been delivered, the original tray moves up to its initial position. The tray is moved up or down by the drive of the tray up/down motor (M6), which rotates the crank lever.

The position of the tray is checked by the tray position sensor (S25).

The tray is identified as being at its up position as soon as the flag moves over S25 and as being at its down position as soon as the flag leaves S25.

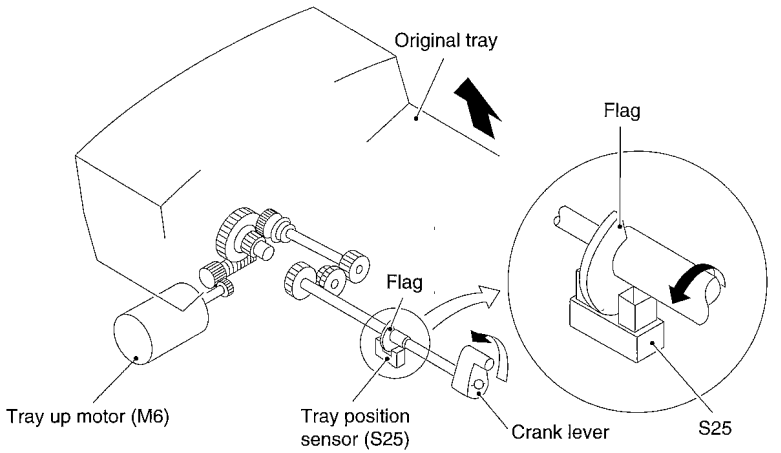


Figure 2-216 Raising the Tray

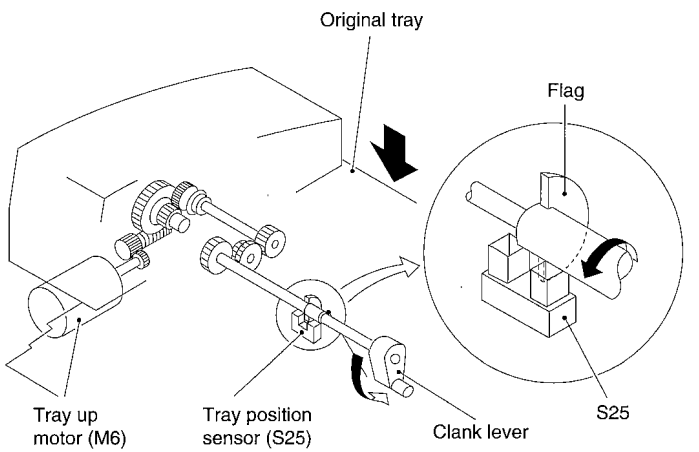


Figure 2-217 Lowering the Tray

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

D. High-speed copying mode

1. Pick-Up

Pick-up operation takes place as follows (2 A4 originals):

① Jogging the Originals

The original jogging plate on the original tray jogs the originals into order (Figure 2-227); at this time, the tray is lowered while rotating the recirculating lever (Figures 2-216, -217).

② Separating the Originals

The pick-up motor (M1) is turned on to rotate the pick-up roller, thereby separating originals to facilitate pick-up.

At this time, the stopper solenoid 1 (SL1) is closed to lower the stopper plate while at the same time bringing down the paper retaining plate on the original by the paper retaining plate solenoid (SL2).

Thereafter, the originals are drawn into the feeding roller starting with the bottom-most original (Figure 2-218).

Reference:

SL2 turns on for the 1st original only.

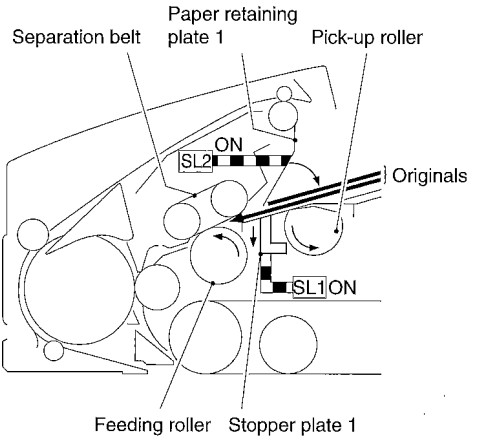


Figure 2-218

③ Pick-Up Separation

The feeding roller moves the original to the reversing roller; at this time, any double feeding is corrected by the separation belt by moving the excess sheets back to the tray (Figure 2-219).

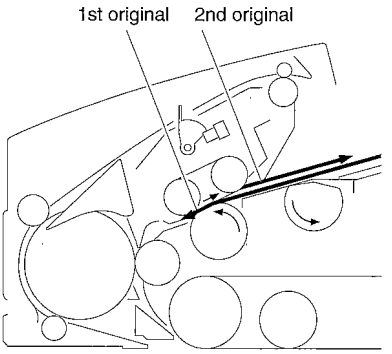


Figure 2-219

COPYRIGHT © 1996 CANON INC.

④ Arching

The leading edge of the original butts against the reversing roller to form an arch, and the pick-up roller stops (Figure 2-220).

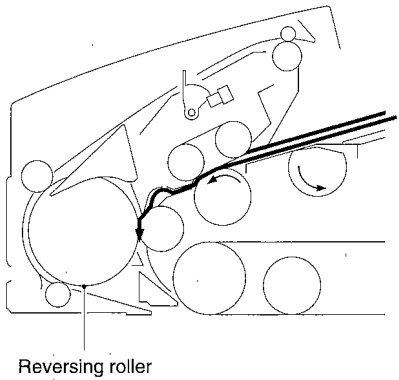


Figure 2-220

⑤ Edge Sliding

The pick-up motor and the reversing motor are rotated at a specific speed to forward the original to a specific position (Figure 2-221).

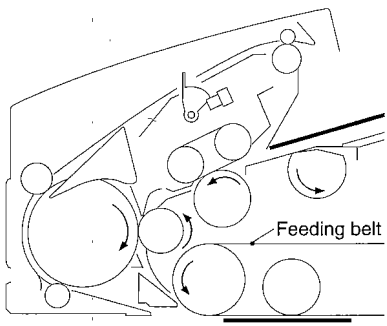


Figure 2-221

⑥ Feeding

The pick-up motor, belt motor (M3), and reversing motor (M2) are rotated at a specific speed to move the original as far as the copyboard glass (Figure 2-222).

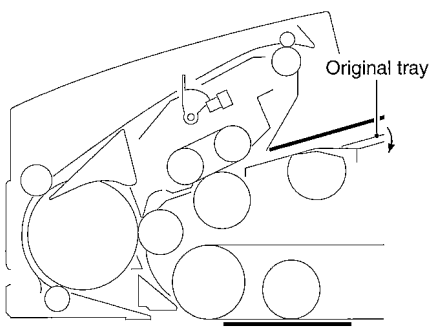


Figure 2-222

COPYRIGHT © 1996 CANON INC.

⑦ Moving the Scanner Forward and Picking Up the 2nd Original

While the scanner is moving forward, the 2nd original is pick up and moved as far as the reversing roller so that it forms an arch (Figure 2-223).

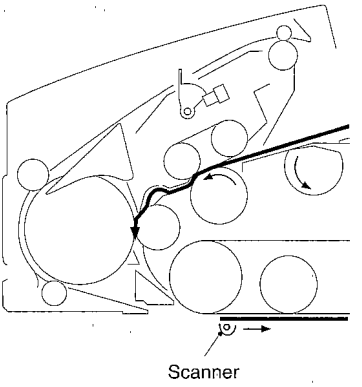


Figure 2-223

⑧ Moving the Scanner Forward and Sliding the Edge of the 2nd Original

While the scanner is moving forward, the reversing roller and the pick-up roller are used to forward the leading edge of the 2nd original forward from the reversing roller (Figure 2-224).

Reference:

The leading edge is moved forward (edge sliding) to close up the gap between the originals.

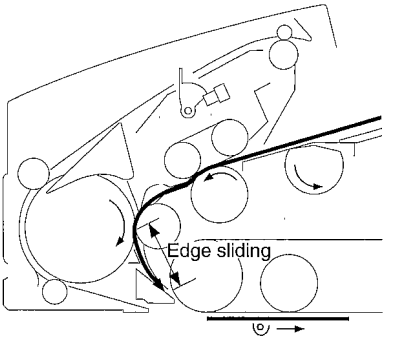
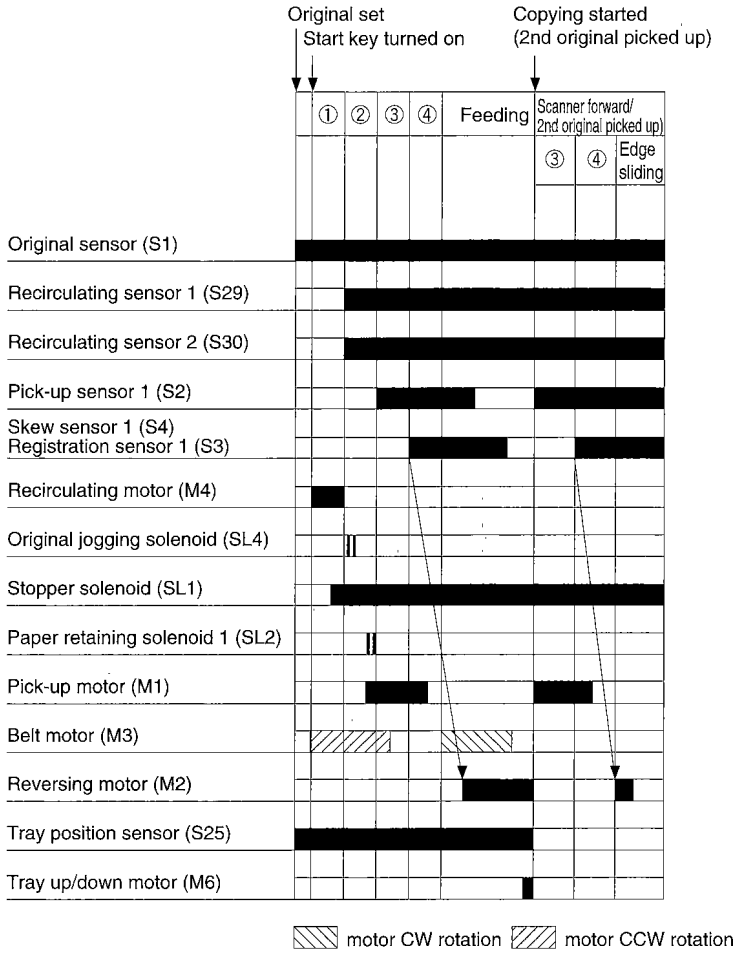


Figure 2-224

COPYRIGHT © 1996 CANON INC.

High-Speed Copying Mode Pick-Up (2 A4 originals)



①original jogging ②original separating ③pick-up seoaration ④arching

Figure 2-225

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

2. Delivery

Originals are picked up as follows (2 originals of A4):

① Moving the originals

When the 1st original has been copied, the belt motor (M3) and the reversing motor (M2) rotate to move the 2nd original to the copyboard glass. At the same time, the 1st original is moved by the feeding belt. The condition causes the guide mount solenoid (SL8) to turn on, lowering the guide mount. (Figure 2-226)

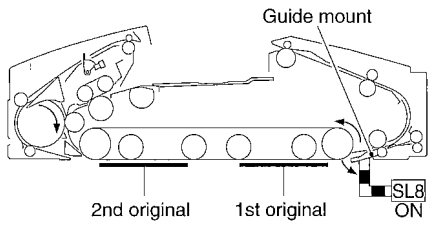


Figure 2-226

② Copying the 2nd Original

The 2nd original is copied while the 1st original is still on the copyboard glass. (Figure 2-227)

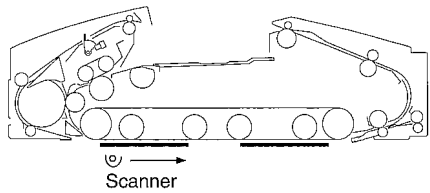


Figure 2-227

③ Delivering the Originals

The belt motor (M3) and the feeding motor (M8) rotate to deliver the 1st and the 2nd originals in sequence.

When the originals have been delivered, the original tray moves up and the guide mount rises. (Figures 2-228 and -229)

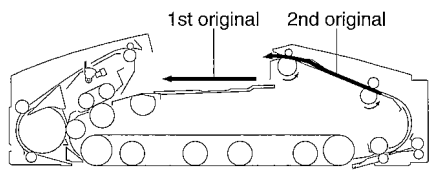


Figure 2-228

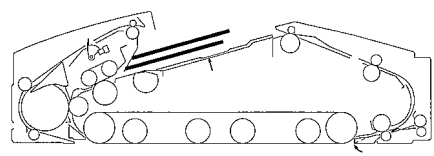


Figure 2-229

COPYRIGHT © 1996 CANON INC.

High-Speed Copying Mode Delivery (A4 original)

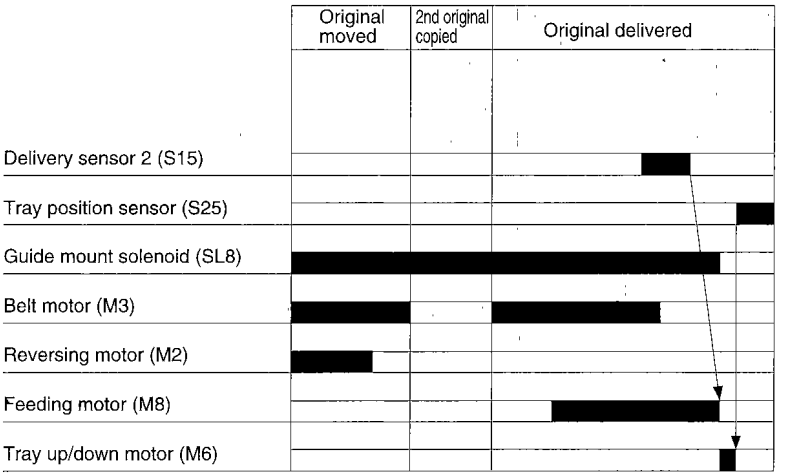


Figure 2-230

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

E. Switch-Back Mode

1. Pick-up

Originals are picked up as follows (2 originals of A4):

① Jogging the Originals

The original jogging plate on the original puts the originals in order (Figure 2-215). At this time, the tray is lowered while rotating the recirculating lever (Figure 2-216, -217).

② Separating the Originals

The pick-up motor (M1) is turned on to separate the originals, thereby facilitating pick-up operation.

At this time, the stopper solenoid 1 (SL1) is moved to lower the stopper plate while at the same time causing the paper retaining plate solenoid 1 (SL2) to lower the paper holding plate on the original.

When all above are in position, the bottommost original is drawn into the feeding (Figure 2-231).

Reference:

SL1 and SL2 are operated only when picking up the 1st original.

③ Pick-Up Separation

The pick-up roller moves the original in the direction of the reversing roller. At this time, any double feeding is corrected, and the excess originals are moved back in the direction of the tray by the separation belt (Figure 2-232).

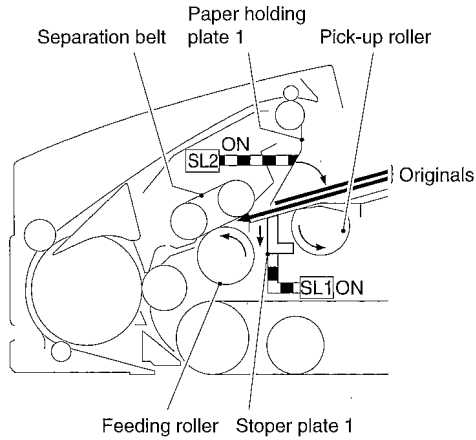


Figure 2-231

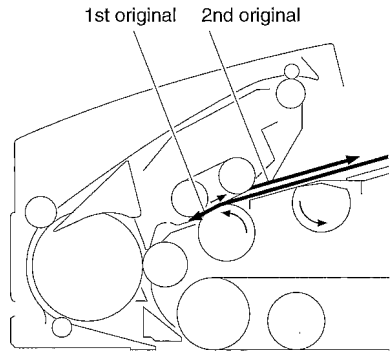


Figure 2-232

COPYRIGHT © 1996 CANON INC.

④ Arching the Original

The pick-up roller stops when leading edge of the original butts against the reversing roller and arches (Figure 2-233).

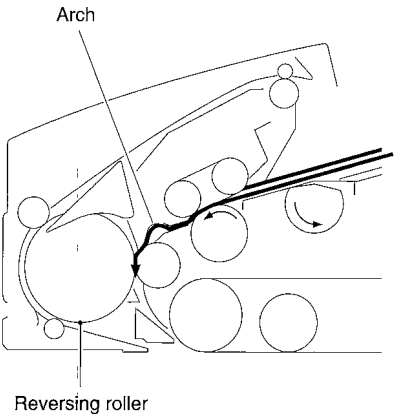


Figure 2-233

⑤ Feeding the Original

The pick-up motor, belt motor (M3), and reversing motor (M2) are rotated at the same speed to move the original to the copyboard glass (Figure 2-234).

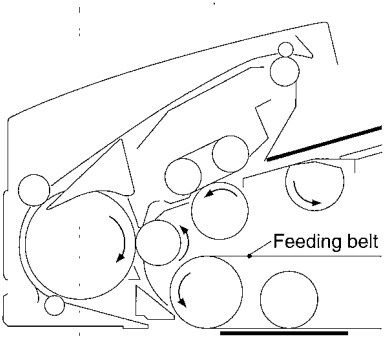


Figure 2-234

⑥ Moving the Scanner Forward and Picking Up the 2nd Original

The 2nd original is picked up and moved as far as the reversing roller and made to arch while the scanner is moving forward. (Figure 2-235).

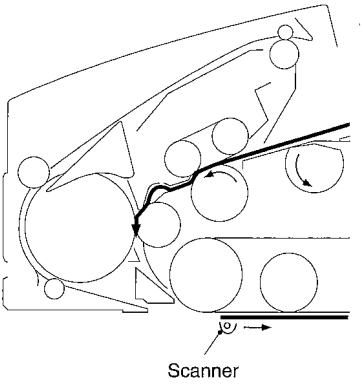


Figure 2-235

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

⑦ Moving the Scanner Forward and Sliding Out the Edge of the 2nd Original

The reversing roller and the pick-up roller are used while the scanner is moving forward to move the leading edge of the 2nd original slightly from the reversing roller (edge sliding; Figure 2-236).

Reference:

This sliding operation is executed to close up the gap between the 1st and the 2nd originals.

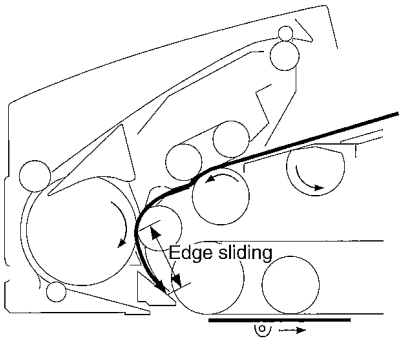
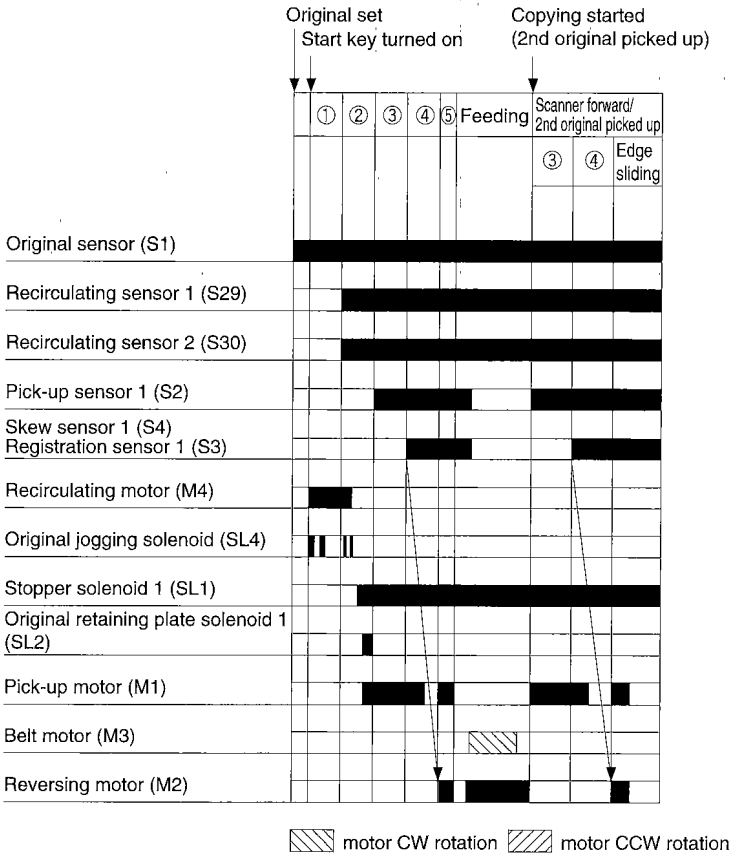


Figure 2-236

COPYRIGHT © 1996 CANON INC.

Sequence of Operations (one-sided original mode; A4, 2 originals)



①jogging originals ②separating originals ③picking up/separating ④arching ⑤edge sliding

Figure 2-237

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

2. Delivery

The originals on the copyboard glass are delivered to the tray as follows:

① Feeding Belt Delivery

The belt motor (M3) is turned in reverse to move the original on the copyboard glass in the direction of the reversing roller so that the leading edge of the original arches; at this time, the 2nd original whose edge has been slid out remains in wait (Figure 2-238).

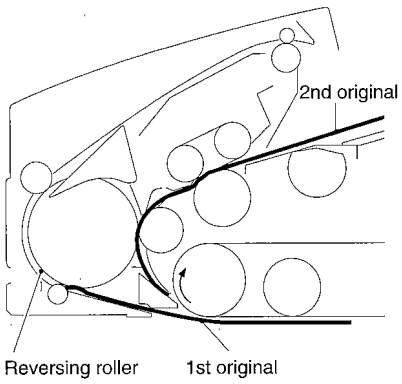


Figure 2-238

② Reversing Roller Delivery

The reversing motor (M2) rotates to move the 1st original in the direction of the delivery roller.

In addition, the 2nd original whose edge has been slid out is moved to the feeding belt by the delivery roller; the pick-up motor (M1) is rotating at this time (Figure 2-239).

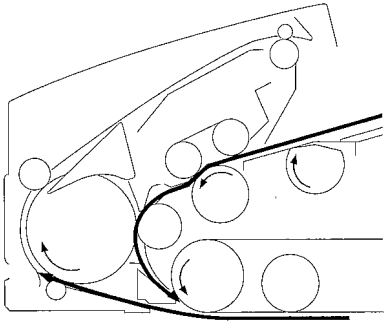


Figure 2-239

③ Delivery/Reversing Roller Delivery

The delivery motor (M5) rotates, and the 1st original is delivered by the delivery roller. At the same time, the 2nd original is moved to the copyboard glass by the reversing roller/feeding belt (Figure 2-240).

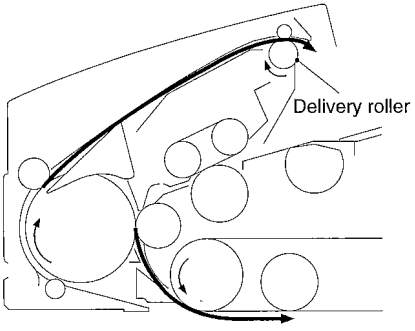


Figure 2-240

COPYRIGHT © 1996 CANON INC.

Delivery Operation (A4 original)

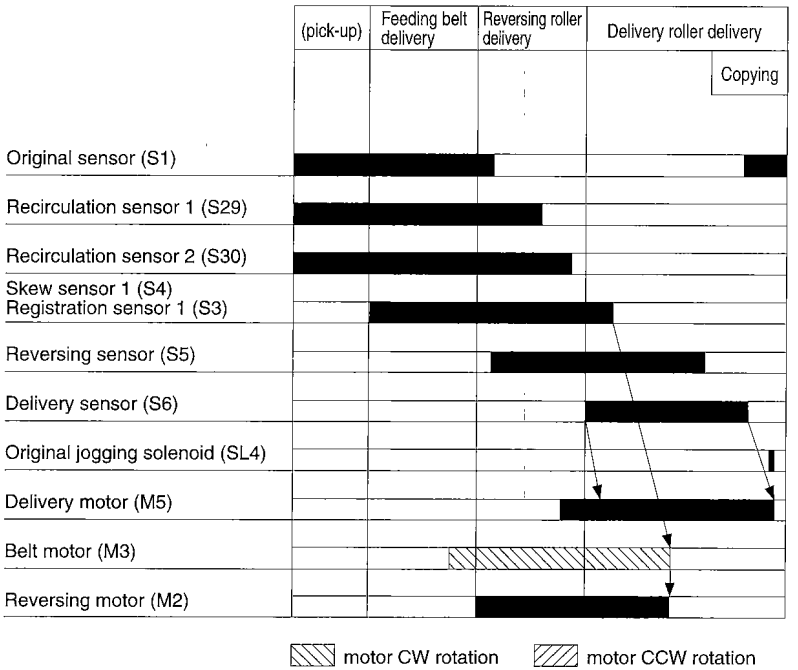


Figure 2-241

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

F. Reversing the Original

1. Operation

Originals are reversed from 1st side to 2nd side or from 2nd side to 1st side, using the same mechanisms. The following discussions are based on reversing from 1st side to 2nd side, starting when the original is placed on the copyboard.

Further, regardless of the orientation of pick-up (left or right), the reversing mechanism after the 1st side is on the copyboard glass is the same.

① Picking Up the 1st Side

The original is picked up from the original tray and moved to the copyboard (Figure 2-242).

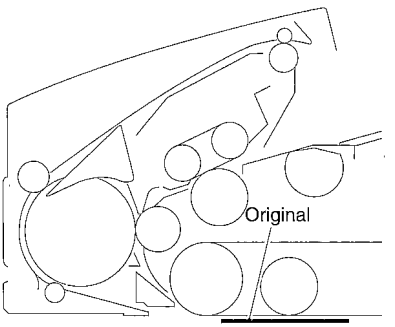


Figure 2-242

② The belt motor (M3) is rotated in reverse to move the original to the reversing roller, thereby causing the original to arch. The paper deflecting plate solenoid (SL3) turns on to form the original path for reversal (Figure 2-243).

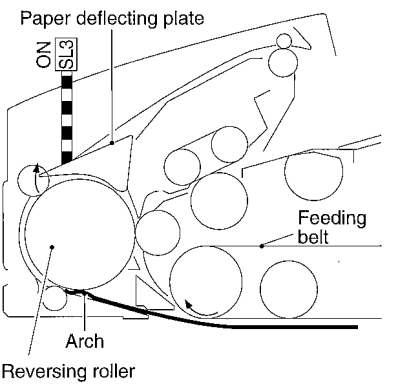


Figure 2-243

COPYRIGHT © 1996 CANON INC.

③ Reversal Feeding

The reversing motor (M2) rotates to move the original. At this time, the original is moved to the feeding belt by the paper deflecting plate (Figure 2-244).

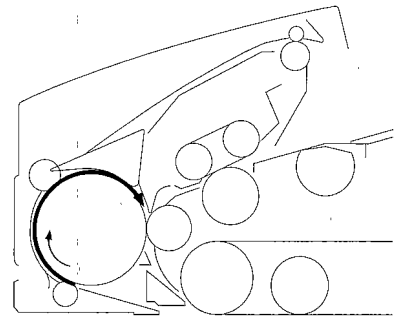


Figure 2-244

④ Feeding Belt Feeding

When the leading edge of the original reaches the registration sensor (S3), M3 rotates clockwise to move the original to the copyboard. SL3 turns off when feeding is over (Figure 2-246).

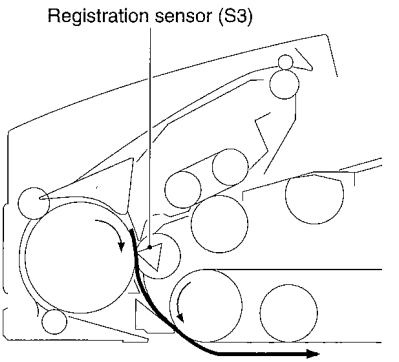


Figure 2-245

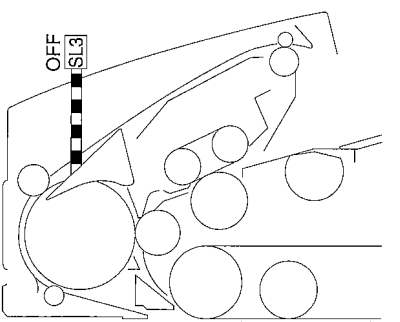


Figure 2-246

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

Reversing Operation (A4 original)

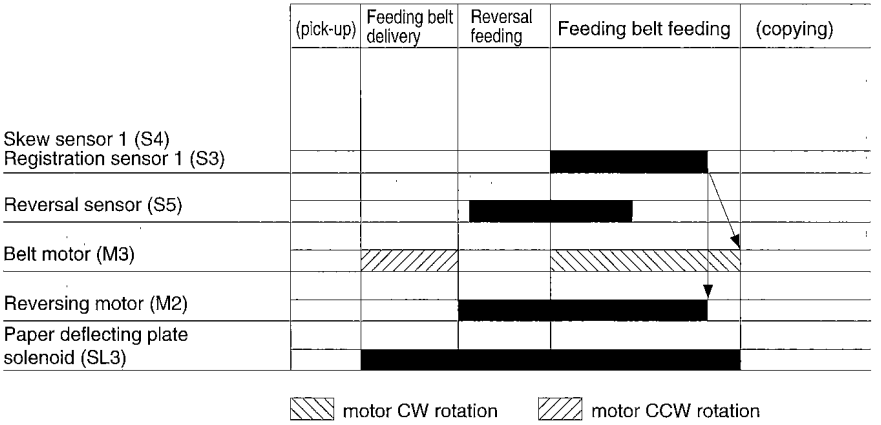


Figure 2-247

COPYRIGHT © 1996 CANON INC.

G. Page Composition Mode

1. Operation

When page composition mode is selected and A5 original is set, the original is picked up by left pick-up.

Since the RF picks up originals starting with the last original, the order of the originals must be reversed for left pick-up. For this, the reversing mechanism is used as follows:

① Picking Up the 1st Original

The 1st original is picked up and stopped on the copyboard glass (Figure 2-248).

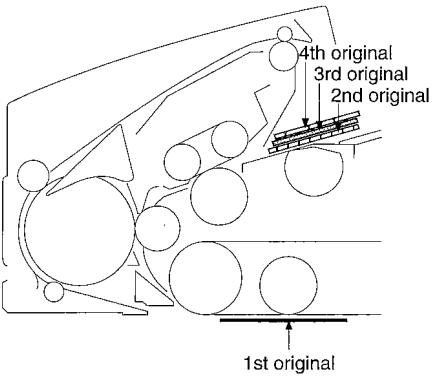


Figure 2-248

② Feeding the 1st Original

The feeding belt is moved in reverse to move the 1st original from the copyboard glass to the reversing roller (Figure 2-249).

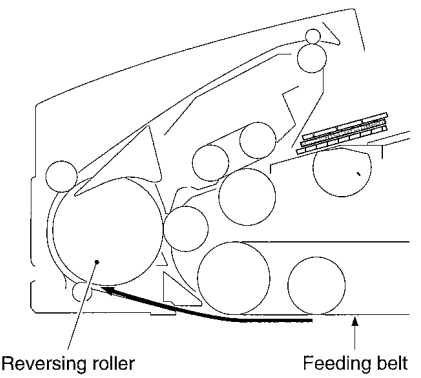


Figure 2-249

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

③ Reversing the 1st Original and Switching the Delivery Paths

The paper deflecting plate solenoid (SL3) is turned on to open the paper deflecting plate, thereby moving the 1st original back to the copyboard glass (Figure 2-250).

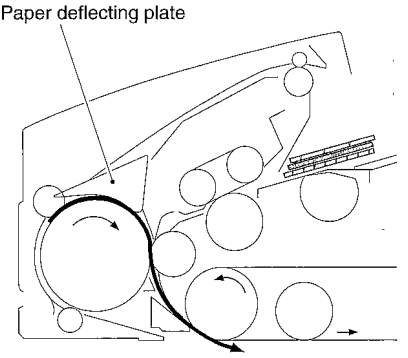


Figure 2-250

④ Separating the 2nd Original and Feeding the 1st Original

The 2nd original is picked up and, at the same time, the feeding belt is rotated clockwise to move the 1st original to the reversing roller (Figure 2-251).

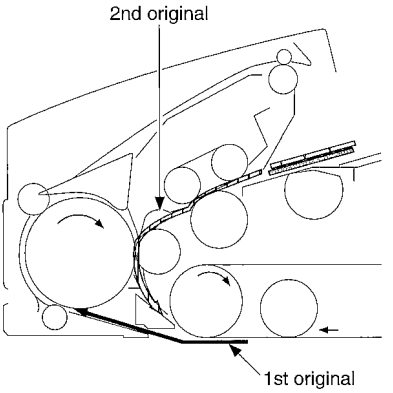


Figure 2-251

⑤ Moving the 1st and 2nd Originals Simultaneously

The reversing roller and the feeding belt are used to move the two originals at the same time, thereby changing the order of the originals and creating a specific gap between the trailing edge of the 1st original and the leading edge of the 2nd original (Figure 2-252).

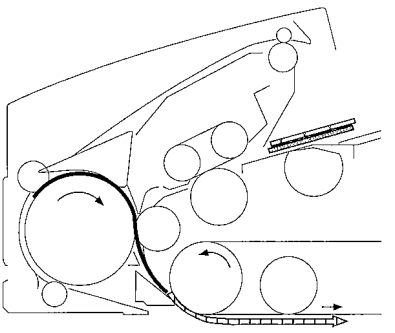


Figure 2-252

COPYRIGHT © 1996 CANON INC.

⑥ Feeding

The reversing roller and the feeding belt rotate at a specific speed to move the 2nd original to the copyboard glass (Figure 2-253).

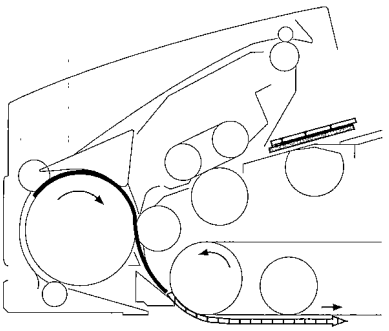


Figure 2-253

⑦ Delivering the 1st Original

When copying is over, the feeding belt is rotated in reverse, thereby drawing the 1st original to the reversing roller for delivery (Figure 2-254).

Reference:

At this time, the leading edge of the 2nd original moves as far as the index on the horizontal size plate and stopped.

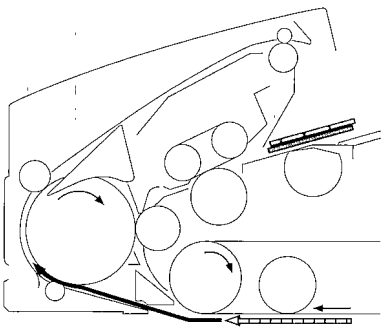


Figure 2-254

⑧ Separating the 3rd Original

The 3rd original is picked up, and the 1st original is delivered (Figure 2-255).

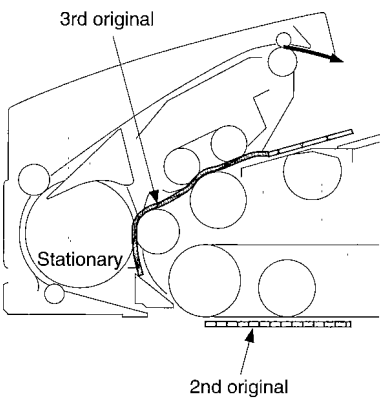


Figure 2-255

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

⑨ Feeding the 2nd Original

The feeding belt is moved clockwise slowly to move the 2nd original to the reversing roller (Figure 2-256).

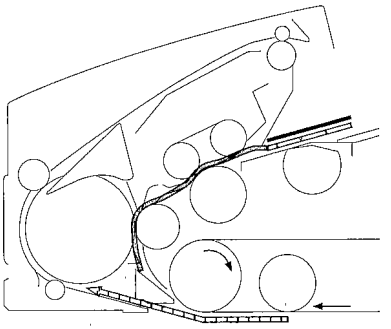


Figure 2-256

⑩ Delivering the 2nd Original and Picking Up the 3rd Original

The 2nd original is delivered, and the 3rd original is picked up and stopped on the copyboard glass.

The operations that follow are identical to those that start with operation 1.

If there is no 3rd or 4th original, the 2nd original is delivered after delivering the 1st original (Figure 2-257).

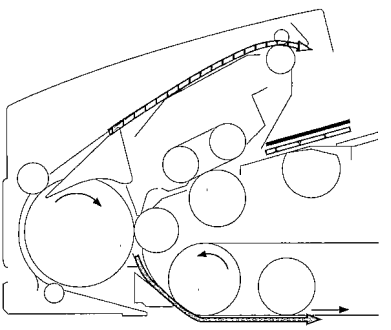


Figure 2-257

COPYRIGHT © 1996 CANON INC.

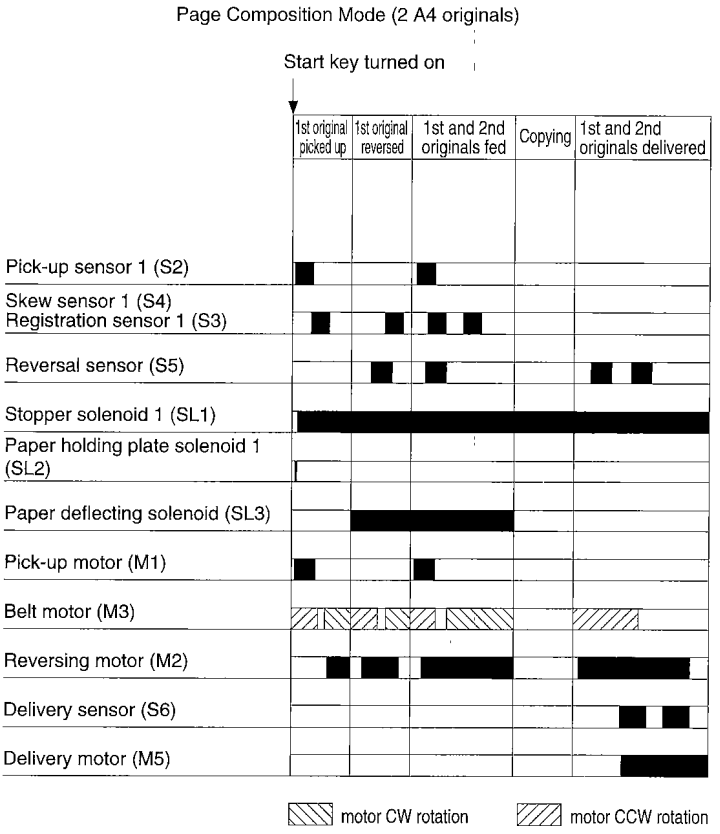


Figure 2-258

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

H. Making Copies Manually

1. Outline

The RDF-E1 allows manual feeding of a single original; see Figure 2-259 for its mechanism.

Originals that are fed manually are moved based on rear reference.

Reference:

Place the original face down when making copies manually.

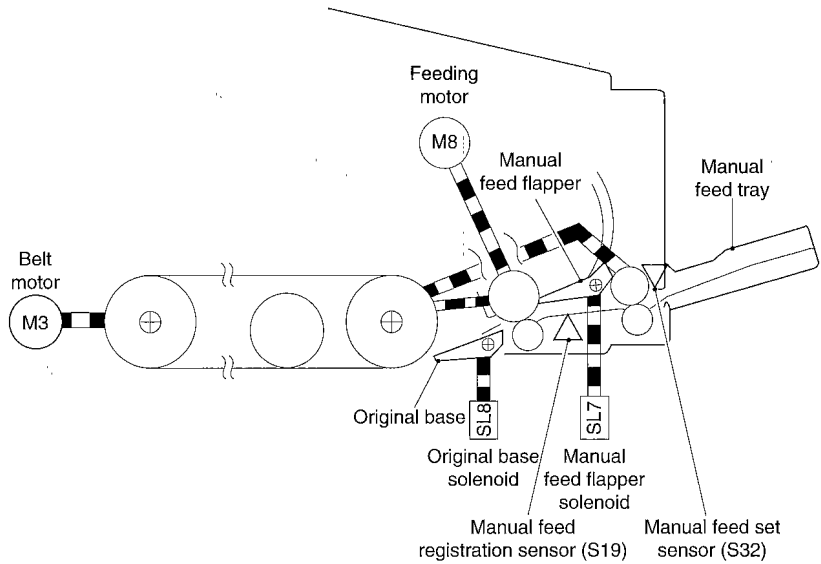


Figure 2-259

2. Pick-Up Operation

When an original is placed over the manual set sensor (S32), the manual feed flapper solenoid (SL7) turns on to form the manual feed pick-up path; at the same time, the belt motor (M3) rotates to draw in paper. The leading edge of the original reaches the manual feed registration sensor (S19) and arches at the manual feed registration roller assembly; thereafter, the belt motor (M3) rotates (in reverse) to feed the original to the position of copying so that the copier may start copying operation.

3. Delivering the Original

When the copier finishes copying operation, the original base solenoid (SL8) turns on to form a feeding path from the copyboard glass to the inside of the RF; then, the belt motor (M3) rotates to deliver the original to the manual feed tray.

COPYRIGHT © 1996 CANON INC.

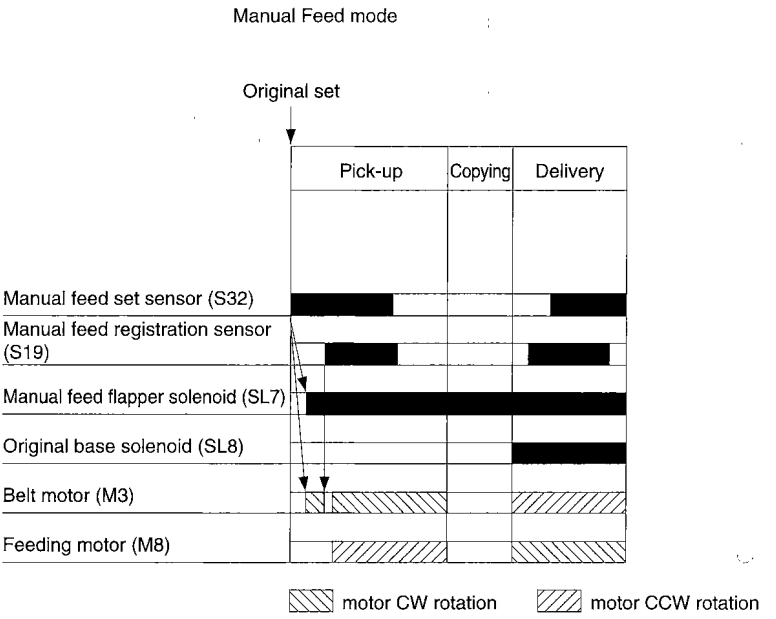


Figure 2-260

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

III. CONTROLLING THE MOTORS

A. Controlling the Motor Speed

1. Outline

The RDF-E1 is equipped with a speed control mechanism that rotates its motors in synch based on clock signals coming from the motors.

Figure 2-301 is a block diagram of the motor speed synch control circuit, which decides which motor clock signals to use to suit the mode selection signals. If the same clock signal is selected for two motors, the rotation speeds of the motors become synchronized so that paper is fed normally even if the paper is found over the paths that are driven by the motors.

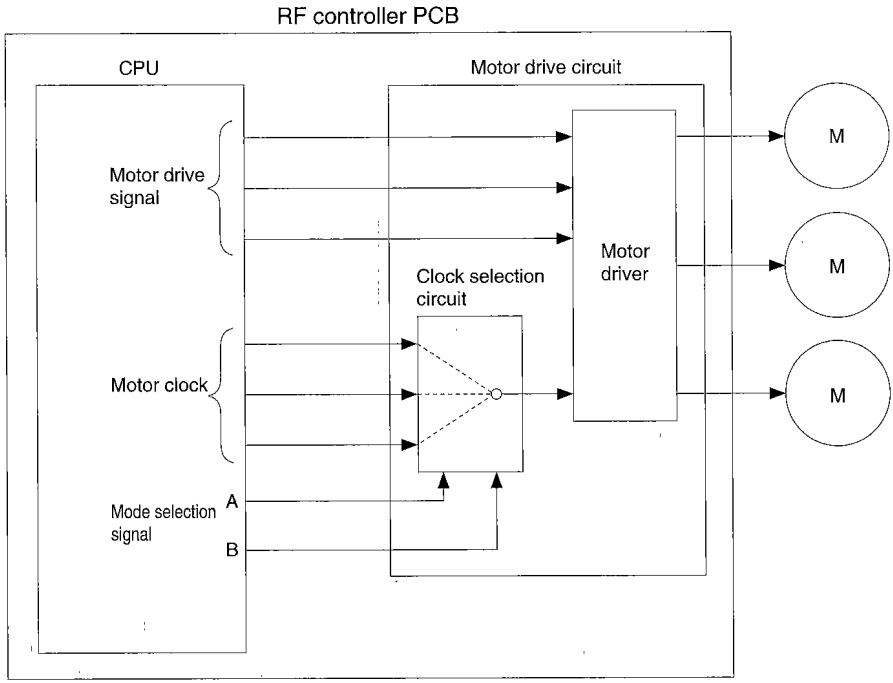


Figure 2-301

COPYRIGHT © 1996 CANON INC.

B. Controlling the Reversing Motor

1. Outline

Figure 2-302 is a block diagram of the control circuit used to control the reversing motor (M2), and the circuit has the following functions:

a. controls the motor rotation speed
b. synchronizes the rotation of the reversing motor and the rotation of the pick-up motor/belt motor
c. puts the reversing motor on hold

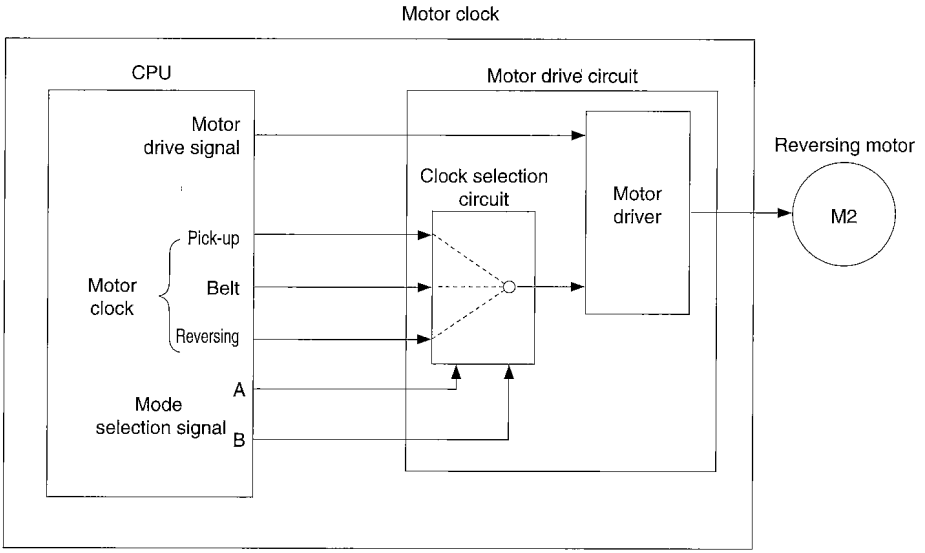


Figure 2-302

2. Operation

The reversing motor is a 2-phase stepping motor, and its rotation speed is varied by changing the pulse width of each phase.

The CPU on the DC controller sends to the motor drive circuit the motor drive signal and the mode selection signal. The mode selection signal is a combination of 0's and 1's (2-bit signal), and the motor drive circuit drives the reversing motor in response to the signal.

Table 2-301 shows the relationship between the mode selection signal and the control mode of the reversing motor.

The mode selection signal is used to decide which motor synch signal is to select; in response to the signal, the reversing motor rotates in synch with the pick-up motor, in synch with the belt motor, or on its own.

Motor drive signal	Mode selection signal A	Mode selection signal B	Operation
1	—	—	stop
0	0	0	hold
0	0	1	speed synchronized with the pick-up motor (M1)
0	1	0	speed synchronized with the belt motor (M3)
0	1	1	drive prohibited

Table 2-301

COPYRIGHT © 1996 CANON INC.

C. Controlling the Belt Motor

1. Outline

Figure 2-303 is a block diagram of the control circuit for the belt motor (M3), and the circuit has the following functions:

a. controls the direction of motor rotation
b. controls the speed of motor rotation

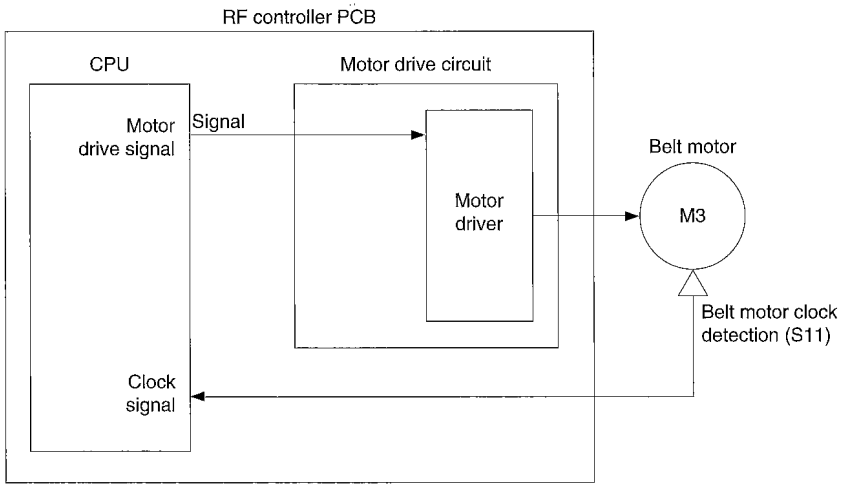


Figure 2-303

2. Operation

The motor is a 2-phase stepping motor; its direction is changed by changing the order of phases, and its speed is changed by changing the pulse width of the two phases.

COPYRIGHT © 1996 CANON INC.

D. Controlling the Feeding Motor

1. Outline

Figure 2-304 is a block diagram of the control circuit for the feeding motor (M8), and the circuit has the following functions:

a. controls the direction of motor rotation
b. controls the speed of motor rotation
c. decides whether the rotation of the feeding motor should be synchronized with the rotation of the pick-up motor/belt motor
d. puts the feeding motor on hold

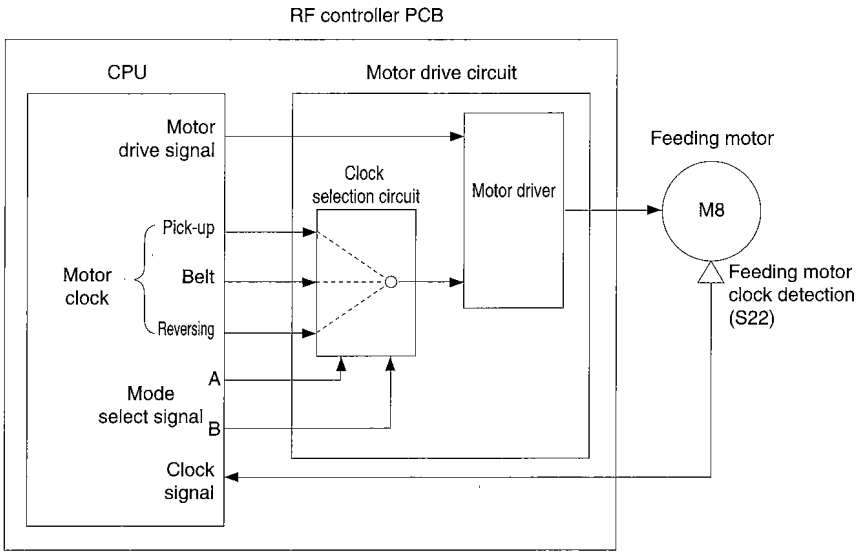


Figure 2-304

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

2. Operation

The motor is a 2-phase stepping motor; its direction of rotation is changed by changing the order in which each of the two phases is excited by the rotation direction control signal, and its speed of rotation is changed by varying the pulse width of each phase.

The CPU on the DC controller sends to the motor drive circuit the motor drive signal and the motor select signal. The motor select signal is a combination of 0's and 1's (2-bit signal), and the motor drive circuit drives the feeding motor in response to this signal.

Table 2-302 shows the relationship between the mode select signal and the feeding motor control mode.

Motor drive signal	Mode selection signal		Operation
	A	B	
1	—	—	stop
0	0	0	hold
0	0	1	speed synchronized with the pick-up motor (M1)
0	1	0	speed synchronized with the belt motor (M3)
0	1	1	drive prohibited

Table 2-302

The mode selection signal is used to decide which synch signal, i.e., motor, to select; in response to the signal, the feeding motor rotates in synch with the pick-up motor or in synch with the belt motor, or on its own.

COPYRIGHT © 1996 CANON INC.

E. Controlling the Pick-Up Motor

1. Outline

Figure 2-305 is a block diagram of the control circuit used to control the pick-up motor (M1), and the circuit has the following functions:

a. controls the direction of motor rotation
b. controls the speed of motor rotation

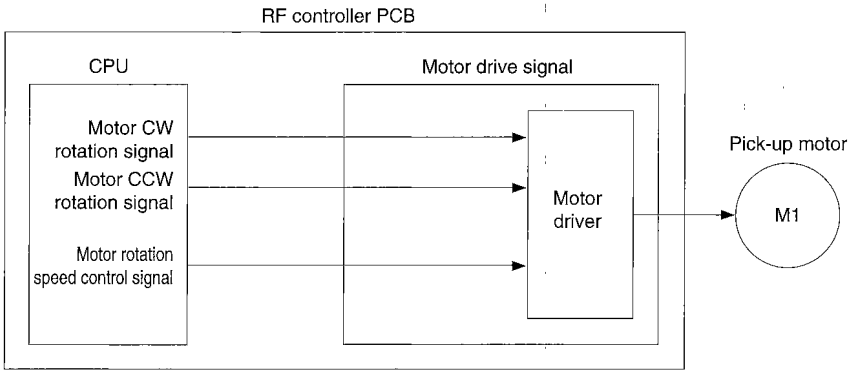


Figure 2-305

2. Operation

The motor is a DC motor; its direction of rotation is changed by the motor CW/CCW signal, and its speed is changed by changing the pulse width by the motor rotation speed control signal.

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

IV. SENSOR

A. Original Sensor 1

1. Outline

Figure 2-401 is a block diagram of the detection circuit for the original sensor 1 (S1). The sensor is of a reflecting type and is designed not to detect external light.

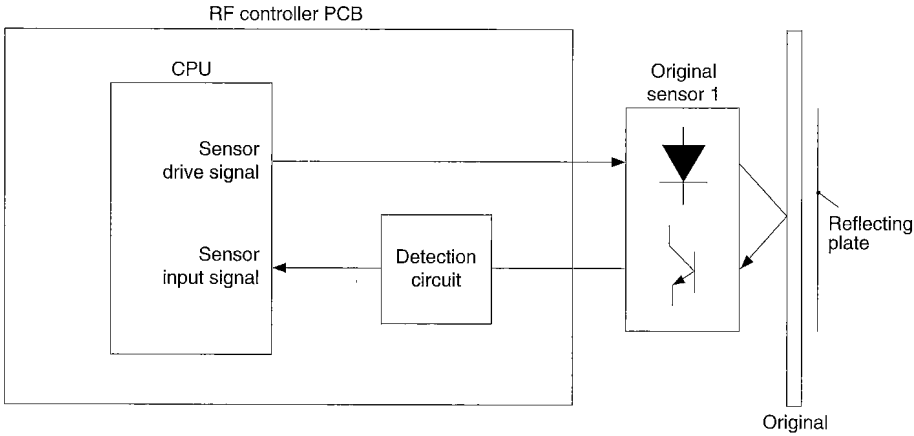


Figure 2-401

2. Operation

The light of the LED emitted by the sensor is generated in the form of square waves by the work of the drive signal from the RF controller PCB. The light reaches the light-receiving cell when the sensor is not detecting an original; this light also consists of square waves. The alternating current of the detection circuit has a very large amplitude, but its direct current has more or less no amplitude. The square waves are detected because they are alternating currents; on the other hand, external light consisting mostly of direct currents are not detected, enabling the detection circuit to detect the light of the LED only while remaining free of any external light.

COPYRIGHT © 1996 CANON INC.

3. Automatic Adjustment of Sensitivity

The sensor has an automatic adjustment mechanism; the LED of the light-emitting cell decreases in intensity over time, and it could identify the absence of an original even in the presence of an original under such a condition.

To avoid such a problem, the RF controller executes automatic adjustment to ensure that the sensor maintains optimum sensitivity: the level of the light reflected by the reflecting plate on the sensor is used as an output representing the absence of paper, and an output twice that level is identified as the presence of paper.

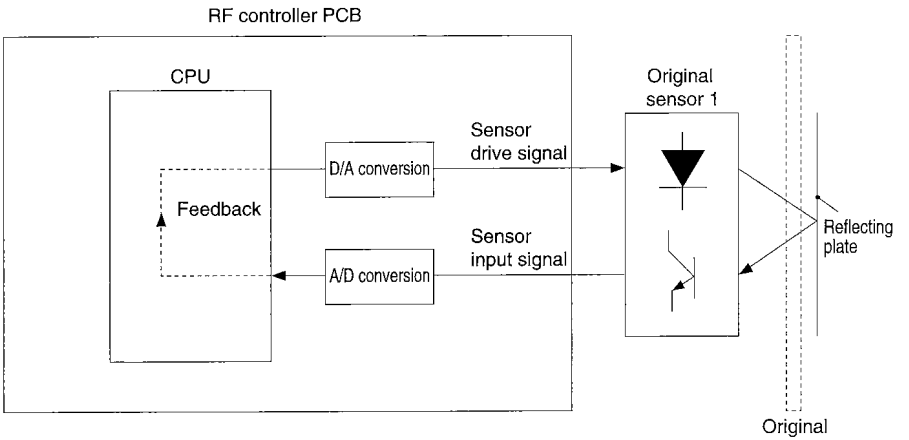


Figure 2-402

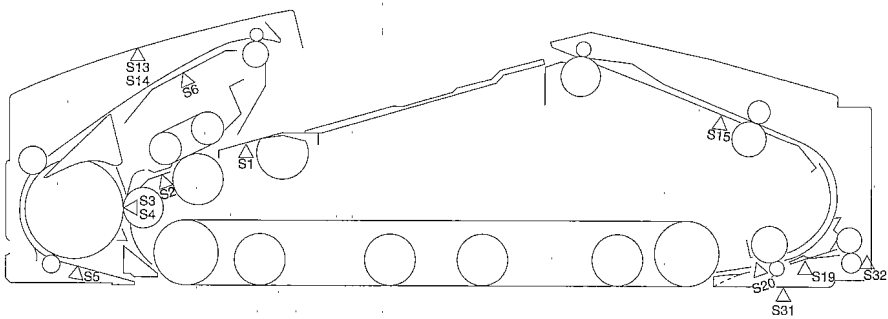
COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

V. DETECTING ORIGINAL JAMS

A. Detecting Original Jams

The mechanism to detect original jams is operated at such times as programmed in the ROM on the RF controller PCB, and jams are identified as to the presence of paper at the appropriate sensor at such times.

When a jam is identified, the description of the jam is sent by the RF to the copier by means of a code; some copiers allow you to check the nature of such a code in service mode.



S1: original sensor 1
S2: pick-up sensor 1
S3: registration sensor 1
S4: skew sensor 1
S5: reversal sensor
S6: delivery sensor
S13: left cover sensor (front)
S14: left cover sensor (rear)
S15: delivery sensor 2
S19: manual feed registration sensor
S20: image leading edge sensor
S29: recirculation sensor 1
S30: recirculation sensor 2
S31: RF open/closed sensor
S32: manual feed set sensor

Figure 2-501

COPYRIGHT © 1996 CANON INC.

	Jam	Sensor	Description	Code
Pick-up	remaining original	S5	S5 detects an original after the belt motor (M3) rotates in reverse.	19H
	pulled original	S1, S2	S2 does not detect an original within a specific period of time after the pick-up motor (M1) has turned on and, in addition, S1 does not detect an original.	21H
	lever idle swing	S29, S30	The recirculating lever has swung idly without coming into contact with an original.	03H
Pick-up	left pick-up trailing edge skew	S3, S4	After left pick-up, the timing at which the original left S3 and the timing at which it left S4 have a difference equivalent of 8 mm or more.	11H
	left pick-up error	S3	The original has left S3 after edge sliding.	13H
	left pick-up delay	S3	After the pick-up motor (M1) has turned on, S3 does not detect an original after feeding an equivalent of 500 mm or more.	22H
	registration delay	S2, S3	After S2 has detected an original, S3 does not detect an original after feeding an equivalent of 60 mm.	23H
	pick-up skew	S3, S4	After left pick-up, the timing at which the S3 detected an original and the timing at which S4 detected an original have a difference an equivalent of 10 mm.	24H
	pick-up stationary	S3	S3 has detected an original for an equivalent of 660 mm.	31H

Table 2-501

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.1 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

	Jam	Sensor	Description	Code
Manual feeding	manual feed pick-up stationary	S32	After the belt motor (M3) has turned on, the original does not leave S32 after feeding an equivalent of 1000 mm.	91H
	manual feed pick-up delay	S20	After the belt motor (M3) has turned on, S20 does not detect an original after feeding an equivalent of 1000 mm.	92H
	manual feed pick-up stationary	S20	S20 detects an original for an equivalent of 750 mm or more.	A1H
	manual feed delivery stationary	S20	After the belt motor (M3) has turned on, S20 does not detect an original after feeding an equivalent of 532 mm or more.	A2H
	manual feed delivery stationary	S19, S20	After S20 has detected an original, the original does not leave S19 after feeding an equivalent of 'length in feeding direction x 1.5' mm.	A3H
	remaining manually fed original	S5	After the belt motor (M3) has rotated in reverse, S5 detects an original.	A4H
Reversal	reversal leading edge skew	S3, S4	After reversal has started, the timing at which S3 detected an original and the timing at which S4 detected an original have a difference an equivalent of 10 mm or more.	15H
	reversal remaining original	S3	S3 detects paper at the time reversal starts.	51H
	reversal pick-up delay	S3, S5	At time of reversal, S3 does not detect paper after feeding an original an equivalent of 163 mm from S5.	52H
	reversal pick-up leading edge skew	S3, S4	At time of reversal, the timing at which S3 detected an original and the timing at which S4 detected an original have a difference an equivalent of 10 mm.	53H
	reversal pick-up stationary	S3	At time of reversal, an original does not leave S3 after feeding an equivalent of 'length in feeding direction x 1.5' mm.	54H
	reversal delay	S5	After the belt motor (M3) has turned on, S5 does not detect an original after feeding an equivalent of 115 mm.	14H
	reversal stationary	S5	S5 detects an original for an equivalent of 'length in feeding direction x 1.5' mm.	41H

Table 2-502

COPYRIGHT © 1996 CANON INC.

	Jam	Sensor	Description	Code
Delivery	delivery delay	S5, S6	After S5 has detected an original, S6 does not detect an original after feeding an equivalent of 218 mm.	25H
	delivery stationary	S6	S6 detects an original for an equivalent of 'length in feeding direction x 1.5' mm.	26H
	delivery delay	S15	S15 does not detect an original within a specific period of time after the belt motor (M3) has turned on.	72H
	delivery stational	S15	S15 detects an original and remains on for an equivalent of 'size x 1.5 mm'.	81H
Others	RF open	S31	The RF is opened during operation.	E1H
	cover open	S13, S14	The left cover is opened during operation.	E2H
	pick-up signal error		The pick-up command arrives from the copier when the RF is not ready for pick-up.	E3H
	remaining initial original		An original is detected in the paper path when operation starts.	E4H
	size error		A large-size original is detected in page composition mode.	E6H
	Error detection		When any conditions that cause error codes E402, E403 and E408 are detected. Note: When these conditions are detected, the first three times the condition is handled as a jam in the RF and the 4th time it is determined to be an error. This is to prevent such faults as document fault and document set fault from immediately being detected as an error. Turning the power OFF and ON resets the number of detections to 0.	FEH

Table 2-503

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.1 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

VI. POWER SUPPLY

A. Outline

The RDF-E1 is supplied with two systems of DC power by the copier: 24 VP (power) and 24 VL (logic).

The 5VDC power supply converts 24 VL to 5 V on the RF controller PCB.

The RF controller PCB is equipped with a lithium battery (BAT1) for back-up purposes.

Reference:

The 36V power supply which is given to the RF by the copier is used as a spare power supply.

B. Protection Mechanisms for the Power Supply Circuit

The RF controller PCB is equipped with a circuit breaker (CB1). If a short circuit occurs in any load for some reason, and any of the motors becomes locked, the breaker is used to cut off the 24VP power.

Caution:

Replace the lithium battery only with the one listed in the Parts Catalog. Use of a different battery may present a risk of fire or explosion. The battery may present a fire or chemical burn hazard if mistreated. Do not recharge, disassemble, or dispose of it in fire.
Keep the battery out of reach of children and discard any used battery promptly.

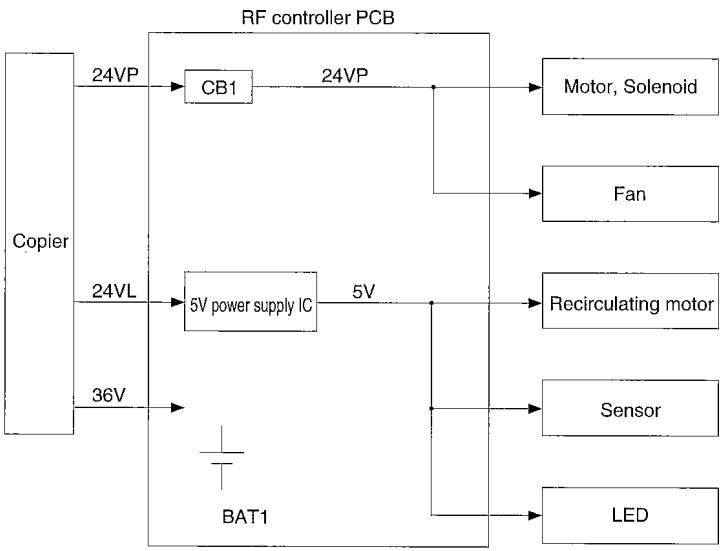
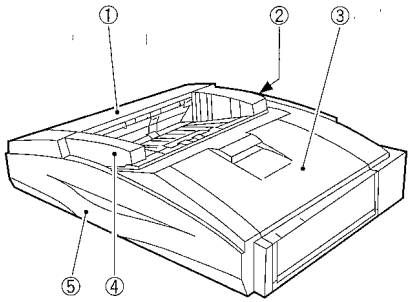


Figure 2-601

COPYRIGHT © 1996 CANON INC.

I. EXTERNALS



① Left feeder cover
② PCB cover
③ Right feeder cover
④ Original tray
⑤ Front cover
⑥ Rear cover

Figure 3-101

1. Removing the Left Cover

1) Remove the front cover (4 screws).
2) Remove the PCB cover (1 screw).
3) Remove the rear cover (4 screws).
4) Remove the four screws ①.
5) Remove the screw ②, and remove the metal fixing ③.

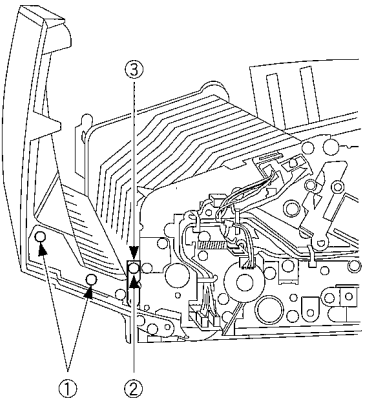


Figure 3-102

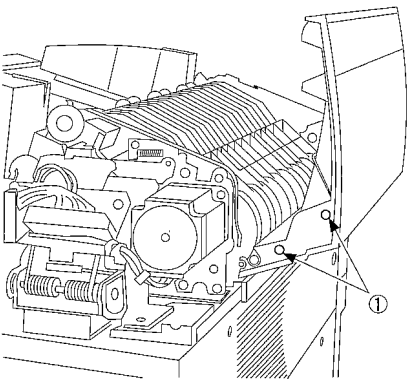


Figure 3-103

6) Remove the left feeder cover.

COPYRIGHT © 1996 CANON INC.

2. Removing the Original Tray

1) Remove the front cover (4 screws).
2) Remove the rear cover (four screws).
3) Remove the two original tray screws ①.

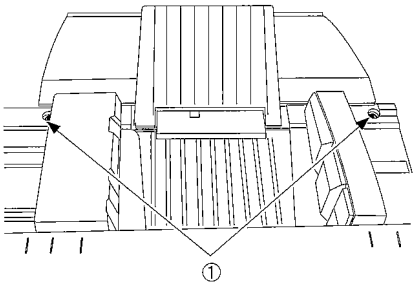


Figure 3-104

4) Disconnect J111 ② from the tray relay PCB.

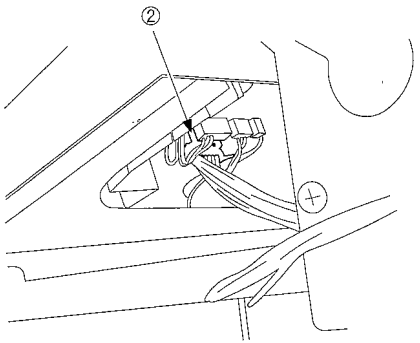


Figure 3-105

5) Remove the original tray.

3. Adjusting the Tray Side Guide

1) Remove the original tray.
2) Slide the side guide so that it clicks to the A4 or LTR position.
3) Loosen the side guide fixing screw ①.

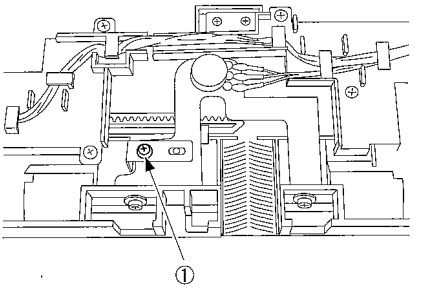


Figure 3-106

4) While being careful not to displace the side guide, slide the side guide so that the tray gap is 'paper width + 1 mm'.
5) Tighten the side guide fixing screw.
6) Install the original tray.

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

4. Adjusting the Position of the Original Jogging Solenoid (SL4)

1) Fix the solenoid (SL4) in place so that the original jogging plate protrudes 1 mm from the tray fixed wall when the steel rod of the solenoid is pushed in.

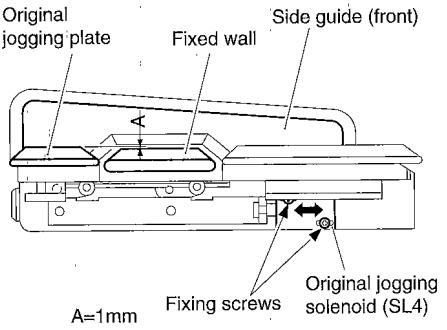


Figure 3-107

5. Adjusting the Height of the Magnet

1) Check that the two feet at the front of the RF and the two magnets come into contact with the copyboard at the same time when the RF is closed.
2) Otherwise, loosen the magnet mounting screw to adjust the height of the magnet.

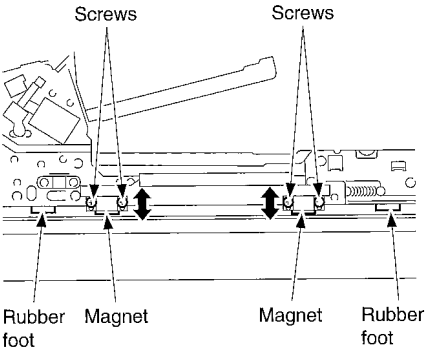


Figure 3-108

3) Tighten the mounting screw on the magnet.

6. Removing the Right Feeder Cover

1) Remove the two screws ①.

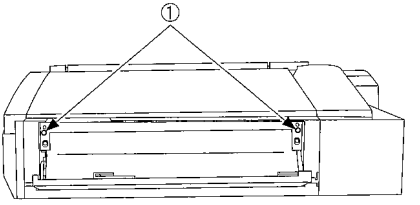


Figure 3-109

2) Remove the right feeder cover.

COPYRIGHT © 1996 CANON INC.

II. DRIVE SYSTEM

A. Reversing Motor Assembly

1. Removing the Reversing Motor (M2)

1) Disconnect J142 ① from the reversing motor driver PCB.

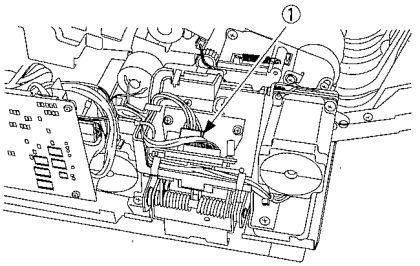


Figure 3-201

2) Remove the two screws ②, and remove the reversing motor ③.

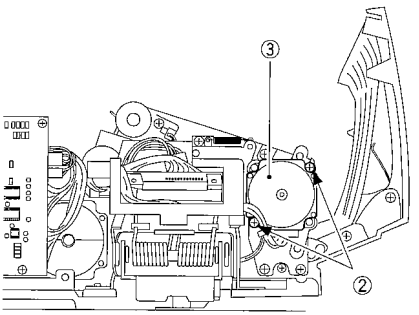


Figure 3-202

2. Adjusting the Position of the Paper Deflecting Plate Solenoid (SL3)

1) Loosen the solenoid fixing screw.
2) Slide the solenoid (SL3) so that the bar ① of the paper deflecting plate and the face A of the paper deflecting plate match when the steel rod of the solenoid is pushed by pushing down the paper deflecting plate into the direction of the arrow A; the stroke should be about 3 mm.

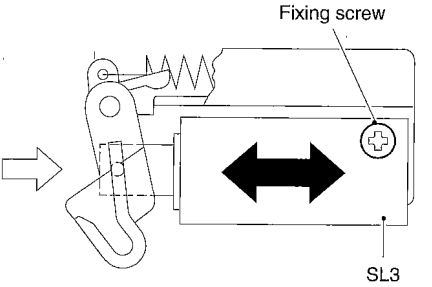


Figure 3-203

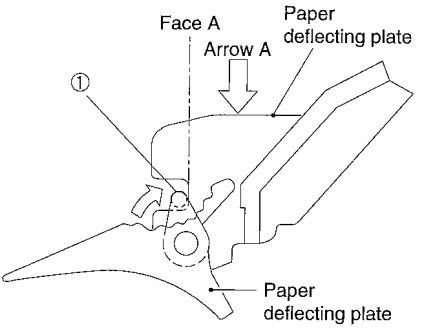


Figure 3-204

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

3) Loosen the screw, and fix the solenoid in place.
4) Make sure that the leading edge is about 5 mm inside from the reversing roller when the solenoid (SL3) is off.

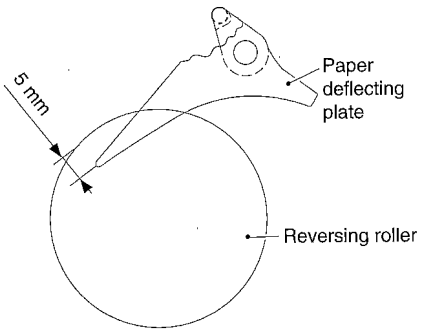


Figure 3-205

COPYRIGHT © 1996 CANON INC.

3. Adjusting the Position of the Paper Retaining Plate Solenoid 1 (SL2)

1) Raise the original tray (by DIP SW on the RF controller PCB).
2) Turn the pick-up roller 1 so that its cut side faces up.

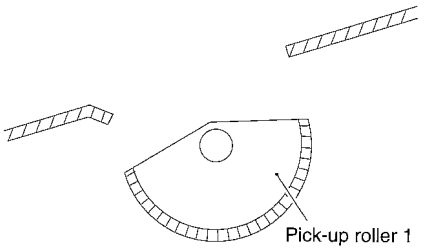


Figure 3-206

3) Loosen the two solenoid fixing screws.
4) Push in the steel rod of the stopper solenoid 1 (SL2) to the limit.

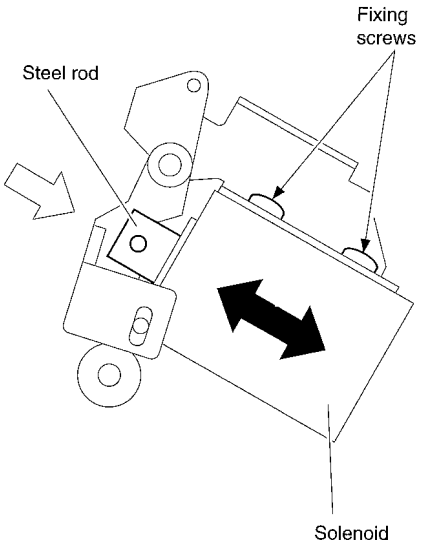


Figure 3-207

5) Slide the solenoid body so that the stopper plate 1 butts against the top face of the plate when the steel rod is pushed in.

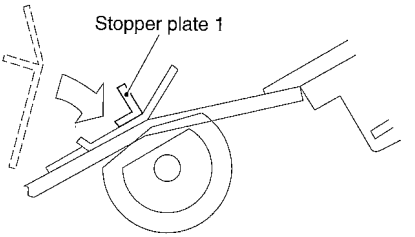


Figure 3-208

6) Tighten the two screws, and fix the solenoid in place.

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

B. Belt Motor Assembly

1. Removing the Belt Motor (M3)

1) Remove the rear cover (4 screws).
2) Remove the RF controller PCB. (See p. 3-17.)
3) Disconnect J152 ① from the belt motor driver PCB.

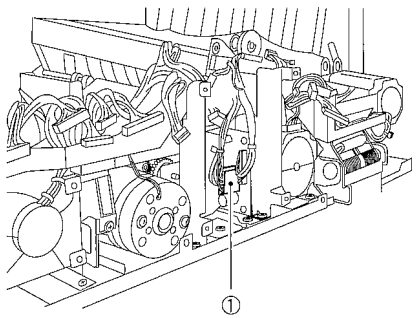


Figure 3-209

4) Remove the two support mounting screws ②.

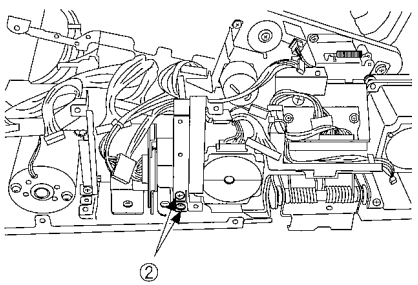


Figure 3-210

5) Remove the two screws ③, and remove the belt motor ④.

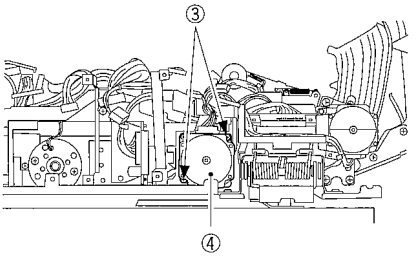


Figure 3-211

COPYRIGHT © 1996 CANON INC.

2. Positioning the Stopper Solenoid (SL1)

1) With the solenoid open, measure the gap A between the end of the stopper plate ① and the metal plate ② of the pick-up guide. (You need not go to the next step if the gap A is 14.3 ±0.2 mm.)

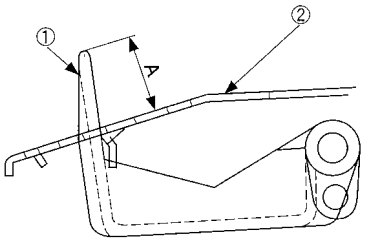


Figure 3-312

2) Remove the two screws, and disconnect the connector; then, remove the original tray.
3) Remove the two screws ④, and remove the guide plate ③ of the pick-up paper guide.

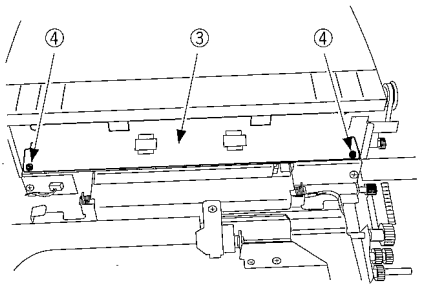


Figure 3-213

4) Loosen the two fixing screws ⑤ on the solenoid.
5) Slide the solenoid ⑥, and adjust the gap A.

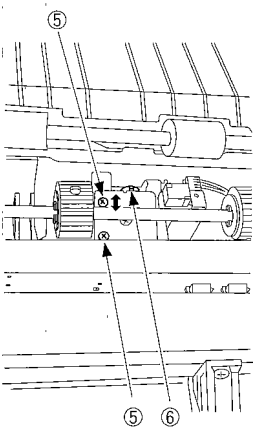


Figure 3-214

6) With the solenoid engaged, make sure that the end of the stopper plate ⑦ is fully below the metal plate ⑧ of the pick-up guide.

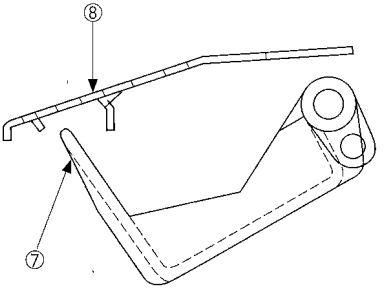


Figure 3-215

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

C. Feeding Motor Assembly

1. Removing the Feeding Motor (M8)

1) Remove the rear cover.
2) Remove the RF controller PCB.
3) Remove the PCB support ① (2 screws ②).
4) Remove the RF open/closed sensor mount ③ (1 screw ④).

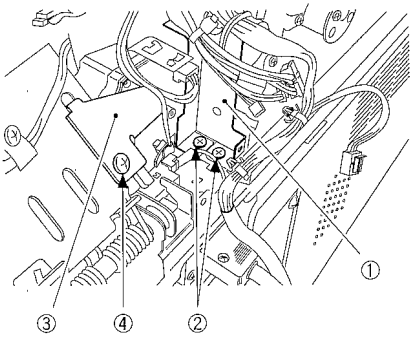


Figure 3-216

5) Remove the feeding motor encoder mount ⑤ (1 screw ⑥).

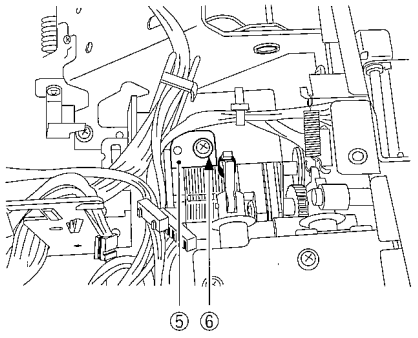


Figure 3-217

6) Remove the two screws ⑦, and remove the feeding motor.

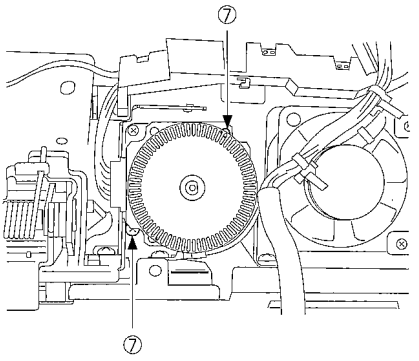


Figure 3-218

COPYRIGHT © 1996 CANON INC.

D. Delivery Motor Assembly

1. Removing the Delivery Motor (M5)

1) Remove the rear cover (4 screws).
2) Disconnect the connector J4 ① from the RF controller PCB.

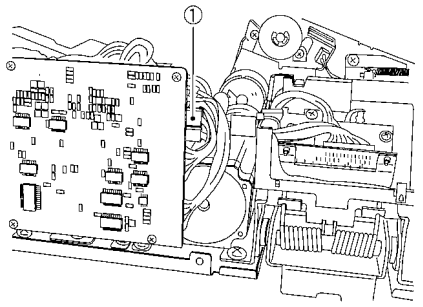


Figure 3-219

3) Remove the two screws ②, and remove the motor mount ③.

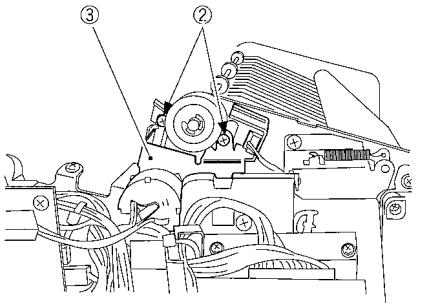


Figure 3-220

4) Disconnect the connectors J224 ④ and J226 ⑤.

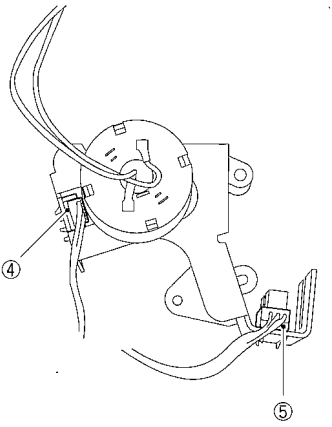


Figure 3-221

5) Remove the encoder plate ⑥ and the tension spring ⑦.

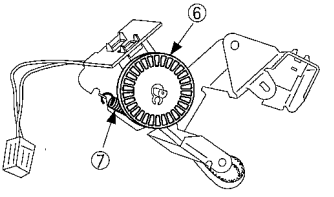


Figure 3-222

6) Remove the two screws ⑧, and remove the delivery motor.

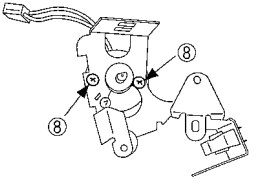


Figure 3-223

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

Caution:

The delivery motor pulley must be as indicated in Figure 3-224.

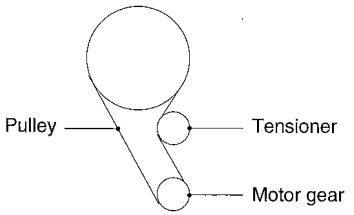


Figure 3-224 (rear view)

COPYRIGHT © 1996 CANON INC.

E. Tray Up/Down Motor Assembly

1. Removing the Tray Up/down Motor Unit

1) Remove the rear cover.
2) Remove the original tray.
3) Remove the RF controller PCB
4) Remove the sub cover ① (2 screws ②).

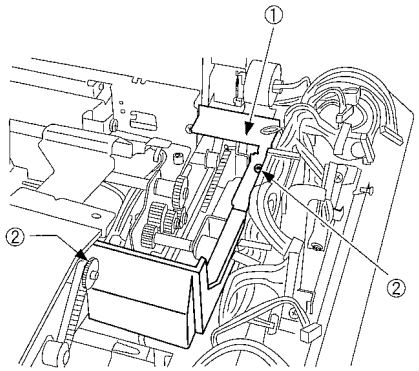


Figure 3-225

5) Remove the E-ring ③ of the connecting shaft, and shift the bushing ④.

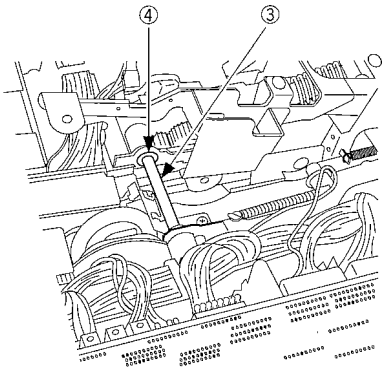


Figure 3-226

6) Remove the three screws ⑤, and remove the up/down motor unit in the direction of the arrow.

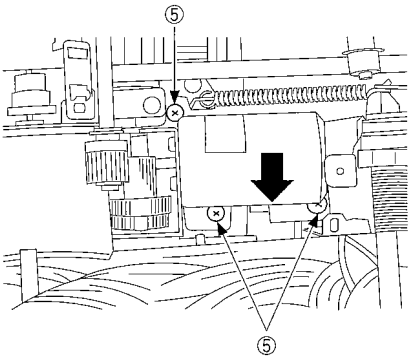


Figure 3-227

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

III. FEEDING SYSTEM

A. Pick-Up Assembly

1. Removing the Pick-Up Roller 1

1) Remove the screw ①, and remove the pick-up roller 1 ②.

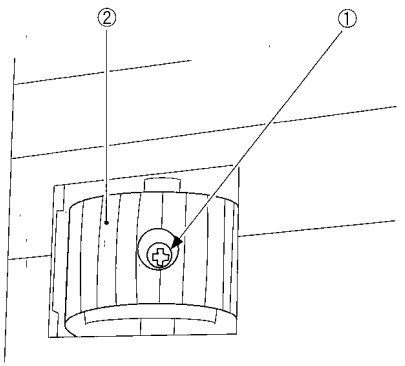


Figure 3-301

2. Orientation of the Pick-Up Roller

When installing the pick-up roller 1, start with the side with a cut-off on the shaft.

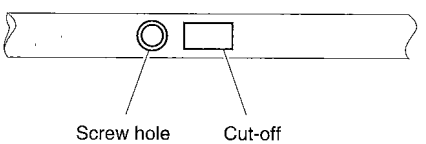


Figure 3-302

3. Removing the Separation Belt Unit (left pick-up)

1) Remove the front cover.
2) Remove the two screws ②, and remove the mount ① of the left feeder cover sensor.

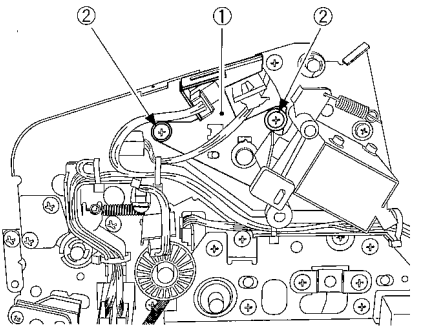


Figure 3-303

3) Remove the delivery sensor mount ③ (1 screw ④).
4) Remove the separation belt unit stopper ⑤ (1 screw ⑥).

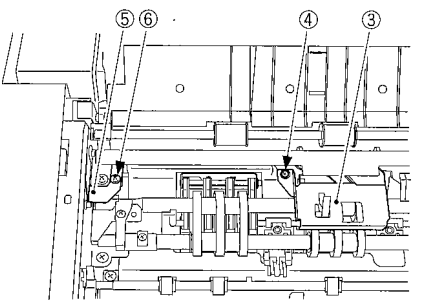


Figure 3-304

COPYRIGHT © 1996 CANON INC.

5) Remove the separation belt unit ⑦.

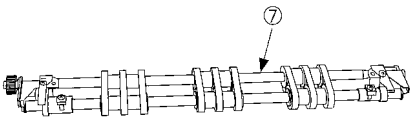


Figure 3-305

4. Removing the Separation Belt (left pick-up)

1) Remove the separation belt unit.
2) Remove the screw ②, and remove the leaf spring ①; then, remove the separation belt ③ in the direction of the arrow.

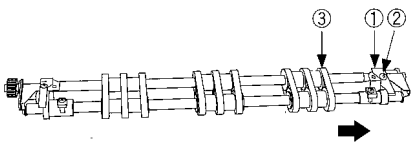


Figure 3-306

5. Removing the Feeding Belt

1) Remove the front cover (4 screws).
2) Remove the belt tension spring (front) ①.

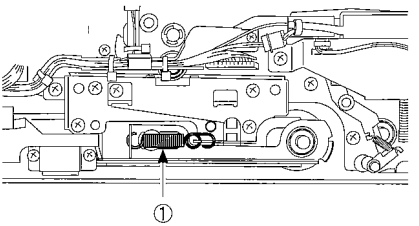


Figure 3-307

3) Move the hook on the belt tensioning spring (rear) ② as indicated in Figure 3-308. (The illustration depicts after the move.)

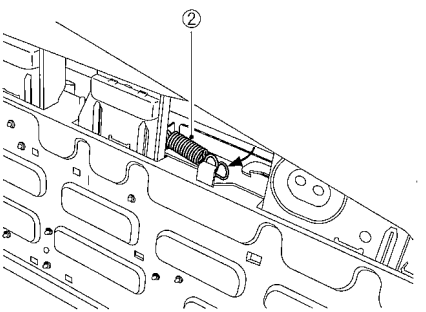


Figure 3-308

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.1 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

4) Remove the connecting plate (right) ③ (4 screws ④).

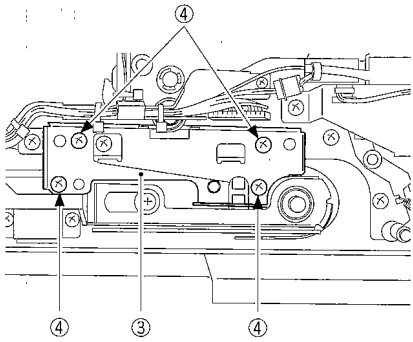


Figure 3-309

5) Remove the connecting plate (left) ⑤ (4 screws ⑥).

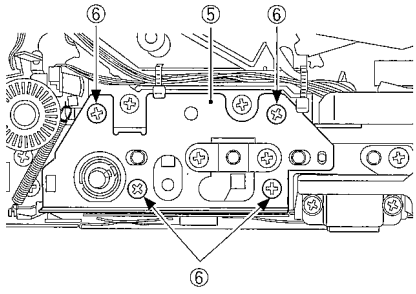


Figure 3-310

6) Remove the feeding belt ⑦ toward the front.

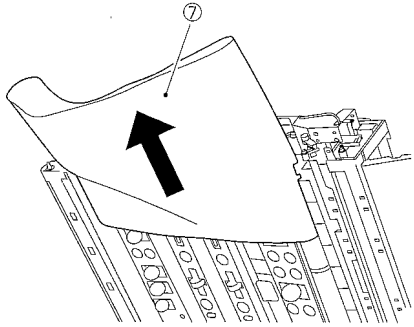


Figure 3-311

Reference:

When installing the feeding belt, put half of it while keeping the RF open halfway (as in Figure 3-311); then, put the remaining length after shifting up the RF.

Caution:

1. Install the feeding belt only after making sure that it is not on the flange.

Figure 3-312

2. Engage the belt tensioning spring on the specified hook.

COPYRIGHT © 1996 CANON INC.

6. Removing the Lower Guide Plate (left)

1) Open the RF.
2) Disengage the spring (rear) ① hook of the lower guide plate (left) from the guide plate and engage it on the hole ② in the rear side plate.

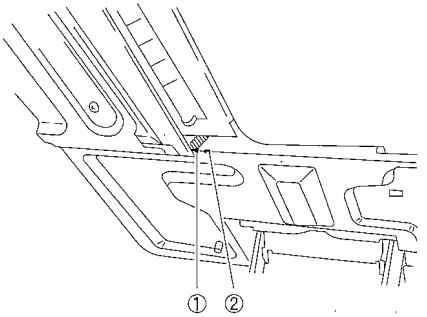


Figure 3-313

3) Remove the spring (front) ③ of the lower guide plate (left), and remove the screw ④.
4) Remove the lower guide plate (left) ⑤.

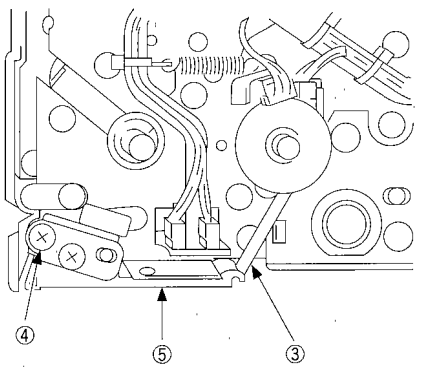


Figure 3-314

7. Removing the Separation Flapper

1) Remove the pick-up unit.
2) Remove the three separation flappers. (Squeeze in both sides of each flapper when removing it.)

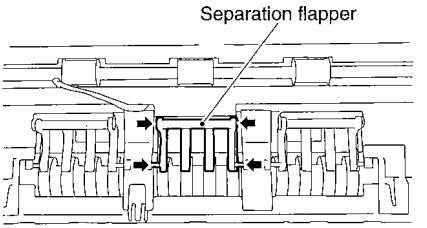


Figure 3-315

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.1 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

B. Feeding Assembly

1. Removing the reversing roller

1) Remove the front cover (4 screws).
2) Remove the PCB cover and rear cover (a total of 5 screws).
3) Remove the mount screw (M3) ① and fixture ②.
4) Remove the two mount screws ③ and joint plate ④.
5) Remove the two stepped screws ⑤ and feeder left cover.

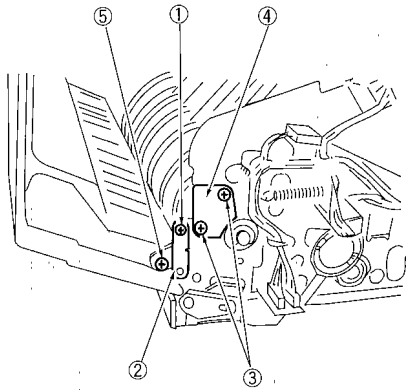


Figure 3-316

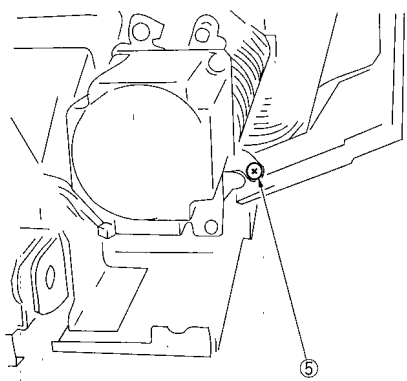


Figure 3-317

6) Remove the three mount screws ⑥ and sensor cover ⑦ and take out the three sensors ⑧.

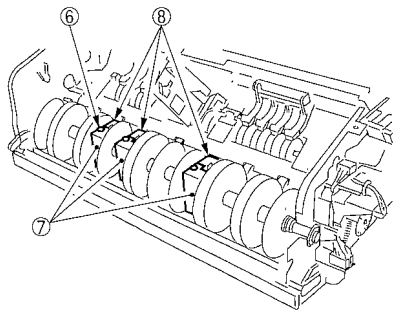


Figure 3-318

Note:
Before insalling the front and rear sensors, make sure to align the sensor to the scribed marks both at the front and rear.

7) Loosen the two screws ⑨.
8) While pressing the reversing motor ⑪ in the direction indicated by the arrow, tighten the two screws ⑨ and loosen the belt tension.
9) Remove the three mount screws ⑩, and detach the reversing motor ⑪ and drive belt.

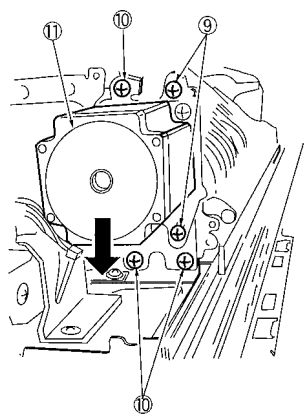


Figure 3-319

COPYRIGHT © 1996 CANON INC.

10) Remove the E ring ⑫ and gear ⑬.

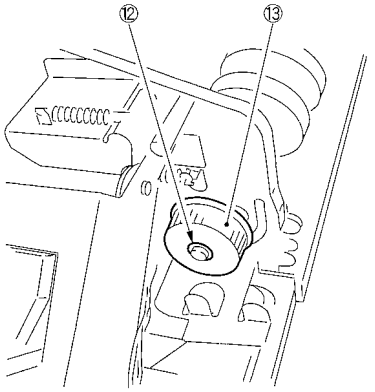


Figure 3-320

11) Remove the E ring ⑭ at the rear end plate side.

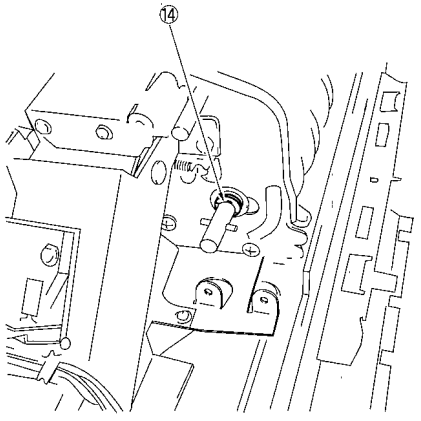


Figure 3-321

12) Remove the E ring ⑮ and the bearing ⑯ at the front end plate side.

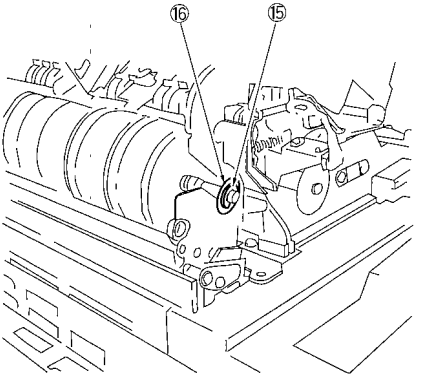


Figure 3-322

13) Remove the E ring ⑰ of the rear release arm and detach the rear release arm ⑱ from the shaft. Diagonally lift and diagonally remove the reversing roller ⑲.

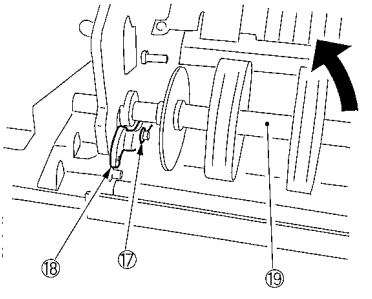


Figure 3-323

Caution:
After assembling, perform sensor initial adjustment and skew amount adjustment.

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

2. Removing the feed roller unit (left pick-up)

1) Remove the front cover (four screws).
2) Remove the separation belt unit (left pick-up).
3) Remove the four mount screws ① and upper guide plate ②.

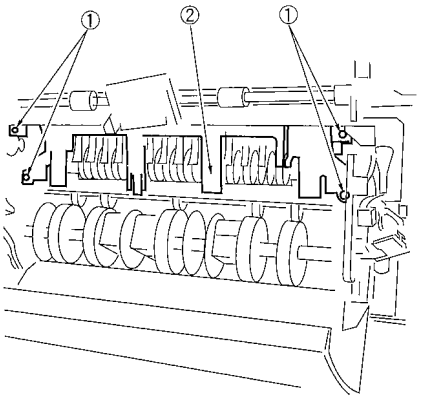


Figure 3-324

4) Remove the two mount screws ③ and lower paper guide ④.

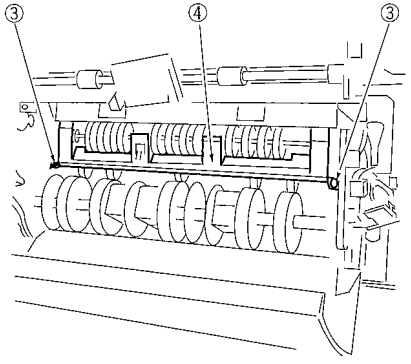


Figure 3-325

5) Remove the mount screw ⑤ and remove the feed roller unit ⑥ together with the front side mount ⑦ and bushing ⑧.

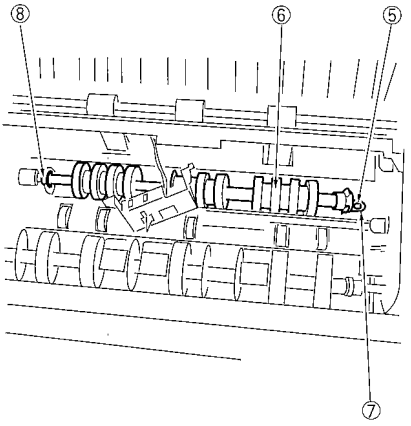


Figure 3-326

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

3. Removing the feed roller (left pick-up)

1) Remove the feed roller unit (left pick-up)
2) Remove the feed roller ① in the direction indicated by the arrow.

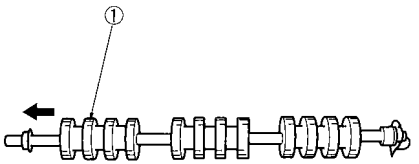


Figure 3-327

Note:
After the feed rollers are put in, be sure the roller rubber is not butted against the collar.

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

IV. ELECTRICAL SYSTEM

1. Removing the Electrical System

1) Remove the rear cover.
2) Disconnect all connectors of the RF controller PCB.
3) Remove the six screws ①, and remove the RF controller PCB ②.

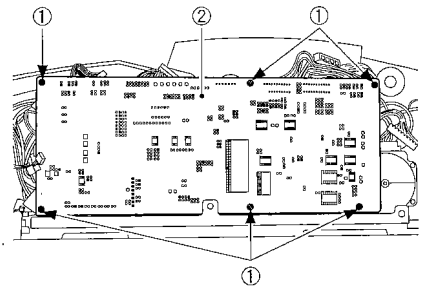


Figure 3-401

2. Removing the Fan (M9)

1) Remove the rear cover.
2) Remove the RF controller PCB.
3) Remove the original tray.
4) Remove the sub cover. (See p. 3-12.)
5) Remove the two screws ①, and remove the fan.

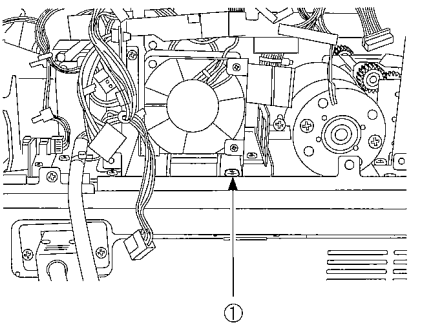


Figure 3-402

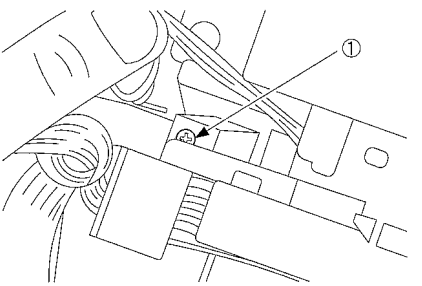


Figure 3-403

COPYRIGHT © 1996 CANON INC.

I. PERIODICALLY REPLACED PARTS

The RDF-E1 does not have parts that need to be replaced on a periodical basis.

II. CONSUMABLES AND DURABLES

Some parts of the machine may have to be replaced once or more over the period of warranty because of wear or damage; replace them as necessary.

as of December 1995

No.	Parts name	Parts No.	Q'ty	Life	Remarks
1	Feeding belt	FC2-1210-000	1	200,000	when cleaning is difficult
2	Pick-up roller(left)	FC2-1532-000	2	250,000	actual copies made
3	Separation belt (left)	FC2-1827-000	9	250,000	actual copies made
4	Separation roller (left)	FC2-1533-000	12	250,000	actual copies made

Note: The above values are estimates only and subject to change based on future data.

Table 4-101

COPYRIGHT © 1996 CANON INC.

III. PERIODICAL SERVICING CHART

A. Maintenance by the User

Item	Upon installation	As necessary	For alert	Remarks
Feeding belt (cleaning)		○		
Copyboard glass (cleaning)		○		copier
Copyboard glass retainer (right; cleaning)		○		copier
Vertical size plate (cleaning)		○		copier

Table 4-102

B. Scheduled Maintenance

△ : clean ● : replace × : lubricate □ : adjust ◎ : inspect

Ref.	Item	every 100,000 copies or 6 mon	every 200,000 or 1 yr	Remarks
	Maintenance by the user	△		
①	Registration sensor 1		△	
②	Manual feed registration sensor		△	
③	Image leading edge sensor		△	
④	Skew sensor 1		△	
⑤	Original sensor 1		△	
⑥	Reversing roller, roll	△		
⑦	Separation belt, Feeding roller 1	△		
⑧	Pick-up roller 1	△		
⑨	Registration roller 1	△		
⑩	Other rollers and rolls		△	

Note: All above values represent the actual number of copies made.

Table 4-103

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.1 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

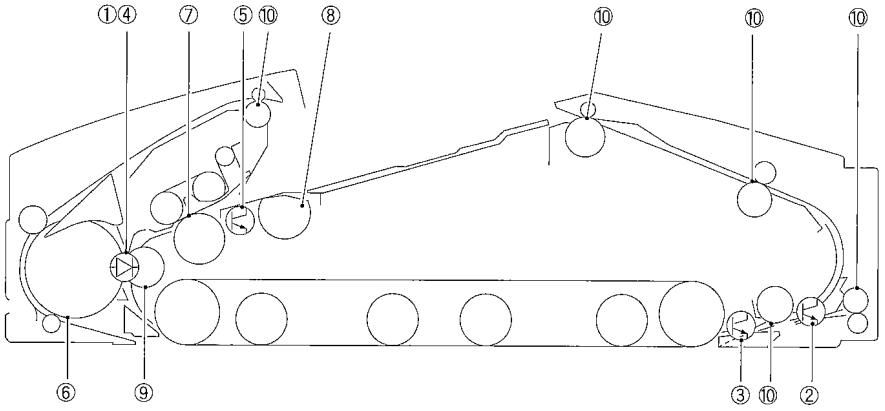


Figure 4-101

COPYRIGHT © 1996 CANON INC.

I. STANDARDS AND ADJUSTMENTS

A. Mechanical

1. Adjusting the Original Stop Position and Angle

When adjusting the original stop position and angle, go through the following in sequence:

① RF angle
② skew
③ slide reading speed
④ leading edge stop position
⑤ horizontal registration

① Adjusting the RF Angle

You will be adjusting the angle (right angle) between the copier's copyboard glass and the RF feeding direction; you will be adjusting the gap between the front edge of the copier's copyboard glass and the RF rubber feet.

1) Close the RF.
2) Measure the gap (ℓ_1, ℓ_2) between the front edge of the copyboard glass and the front edge of the rubber feet.

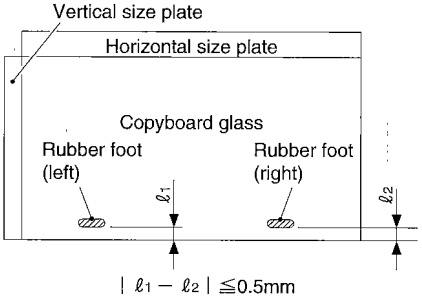


Figure 5-101

2-1) Put a ruler between the copier and the RF, and butt it against the rubber foot.
2-2) While holding the ruler, open the RF and measure ℓ_1 and ℓ_2.

Reference:

Remove the RF front cover to facilitate the work.

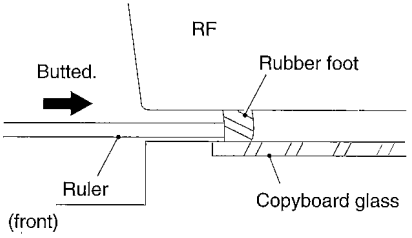


Figure 5-102

3) If the difference between ℓ_1 and ℓ_2 is not 0.5 mm or less, go to the next step.
4) Loosen the nut at the rear of the right hinge unit, and make adjustments by turning the adjusting screw.

Caution:

You must turn the adjusting screw after opening the RF.

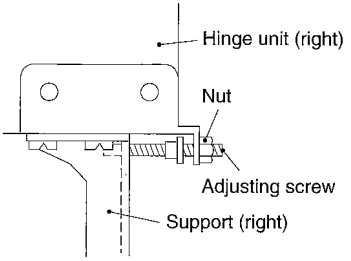


Figure 5-103

if $\ell_1 > \ell_2$	Turn the adjusting screw counterclockwise.
if $\ell_2 > \ell_1$	Turn the adjusting screw clockwise.

Table 5-101

COPYRIGHT © 1996 CANON INC.

5) Tighten the nut to fix the adjusting screw in place.
6) Check the RF angle by manually feeding paper.
6-1) Remove the board cover from behind the RF.
6-2) Shift bits 5 and 6 of the DIP switch on the RF controller PCB to ON.

Figure 5-104

6-3) Set A4 or LTR paper on the manual feed tray.
6-4) Press the push switch 1 on the RF controller PCB once so that the original is picked up and stopped on the copyboard glass.
6-5) Open the RF slowly, and make sure that A•B indicated in Figure 5-105 is less than 2 mm. After closing the RF slowly, push the push switch 1 once to discharge the original.

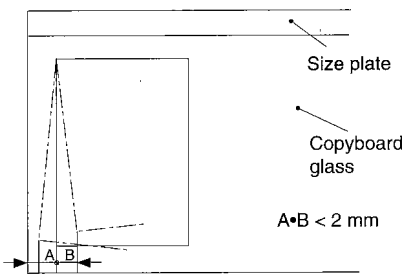


Figure 5-105

6-6) If A•B is not within 2 mm, loosen the nut and make adjustments once again.

② Removing the Skew
a. Removing the Left Pick-Up Skew
Checking the Skew
1) Open the sub tray.
2) Place an A4 or LTR original on the original tray.
3) Shift bit 1 of the DIP switch on the RF controller PCB to ON.

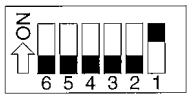


Figure 5-106

4) Press the push switch 1 on the RF controller PCB once so that the original is picked up and stopped on the copyboard glass.
5) Open the RF slowly, and check that A•B indicated in Figure 5-107 is 2 mm or less; after closing the RF slowly, press the push switch 1 once to discharge the original.

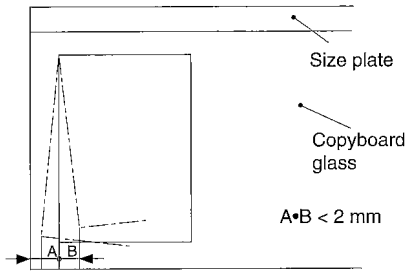


Figure 5-107

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

Measuring the Feeding Force

To remove the skew at this pick-up position, you will be measuring and adjusting the separation belt pressure (feeding force).

1) Prepare a test sheet for measuring feeding force. (Use 64 g/m² paper or 80 g/m² paper.)

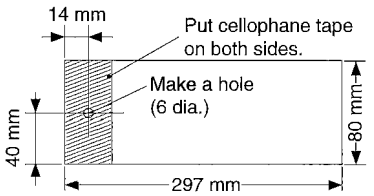


Figure 5-108

2) Make sure that the sub tray is open.
3) Shift bits 4, 5, and 6 of the DIP switch on the RF controller PCB to ON.

Figure 5-109

4) Press the push switch 1 on the RF controller PCB once, and let the test sheet you have prepared drawn into the separation belt assembly. Measure the feeding force at two locations (front, rear) of the separation belt assembly.

Caution:

1. Make sure that the separation belt is in contact with the test sheet.
2. When pulling off the test sheet, pull it straight off along the separation belt.

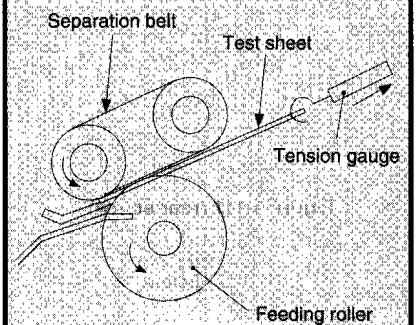


Figure 5-110

Removing the Skew

64 g/m^2 paper	80 g/m^2 paper
150 to 200 (g)	200 to 300 (g)

Table 5-102 Guide to Feeding Force

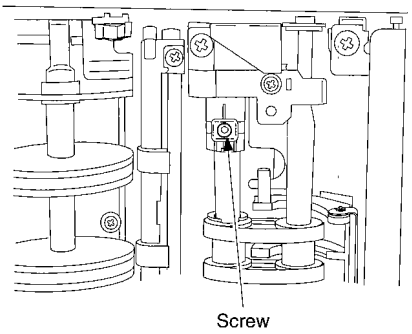


Figure 5-111 (rear screw)

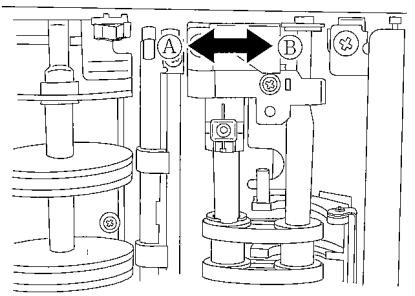


Figure 5-113 (rear adjusting roll)

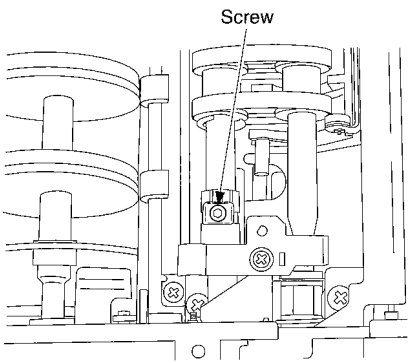


Figure 5-112 (front screw)

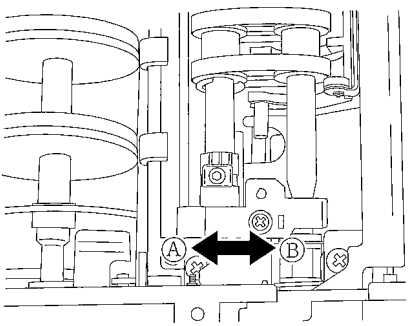


Figure 5-114 (front adjusting roll)

COPYRIGHT © 1996 CANON INC.

1) To remove the skew, loosen the screw on the separation belt unit and move the adjusting roll.
   • If A > 0,
   a. If the feeding force at the front is higher than the reference (Table 5-102), turn the adjusting screw at front (Figure 5-114) in the direction of B.
   b. If the feeding force at the rear is higher than the reference (Table 5-102), turn the adjusting roll at the rear (Figure 5-113) in the direction of A.

   • If B > 0,
   a. If the feeding force at the front is higher than the reference (Table 5-102), turn the adjusting screw at the front (Figure 5-114) in the direction of A.
   b. If the feeding force at the rear is lower than the reference (Table 5-102), turn the adjusting roll at the rear (Figure 5-113) in the direction of B.

2) Tighten the screw, and measure the feeding force once again; make sure that the difference between front and rear has decreased and is within the tolerance.

COPYRIGHT © 1996 CANON INC.

b. Removing the Reversal Registration Skew

1) Open the sub tray.
2) Place an A4 or LTR original on the original tray.
3) Shift bits 1 and 2 of the DIP switch on the RF controller PCB to ON.

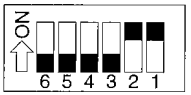


Figure 5-115

4) Press the push switch on the RF controller PCB twice so that the original is picked up, moved to the copyboard glass, and reversed.
5) Open the RF slowly, and check that A•B indicated in Figure 5-116 is 2 mm or less.

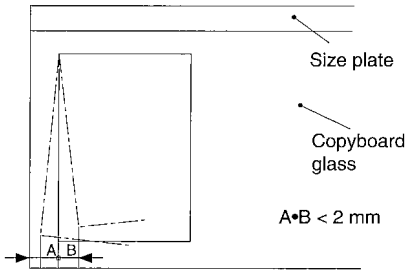


Figure 5-116

6) If the measurement is not as specified, loosen the reversing registration roller mount screw.

7) Slide the reversing registration roller mount to left and right to adjust the angle of the reversing registration roller mount.

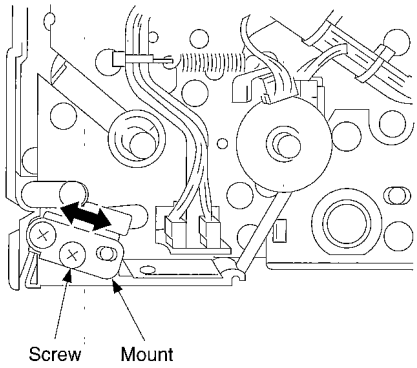


Figure 5-117

if A > 0	slide the mount to the right.
if B > 0	slide the mount to the left.

Table 5-103

8) Tighten the reversing registration roller mount screw.

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

③ Adjusting the Original Stop Position

In this adjustment, you will be adjusting the stop position of the original on the copyboard glass; you must adjust for each pick-up position.

a. Left Pick-Up

1) Open the sub tray.
2) Place an A4 or LTR original on the original tray.
3) Shift bits 5 and 6 of the DIP switch on the RF controller PCB to ON.

Figure 5-118

4) Press the push switch 1 on the RF controller once so that the original will be picked up and stopped on the copyboard glass.
5) Open the RF slowly, and measure the dimension A indicated in Figure 5-119; thereafter, close the RF slowly.

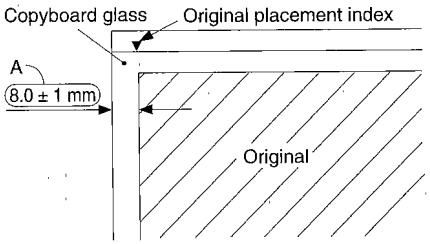


Figure 5-119

6) To adjust the stop position, use push switches 2 and 3 on the RF controller PCB. Each press on the switch changes the belt motor (M3) stop timing, thereby changing the original stop position by 0.5 mm; you can check the degree of change in reference to the LED code (Table 5-105). When you have pressed the push switch 2 or 3 as many times as necessary, press the push switch 1 once to discharge the original and store the new setting.

Push switch	Direction of stop position
PUSH SW 2	right (delaying the motor stop timing).
PUSH SW 3	left (advancing the motor stop timing).

Table 5-104

COPYRIGHT © 1996 CANON INC.

Example

If the dimension A is 10 mm, press the push switch 3 four times, and press the push switch 1 once to discharge the original and store the new setting.

7) Close the sub tray.

Caution:

Under the adjustment, the same DIP switch configuration is used for left pick-up and manual feed pick-up, although the sub tray is checked as to whether it is open or closed and paper is checked whether it has been fed manually. In the light of this, it is very important that you open the sub tray when adjusting for right pick-up.

	-10,-9,-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8,9,10
LED1	△	○		○		○		○		○		○		○		○	△
LED2			○	○			○	○			○	○			○	○	△
LED3					○	○	○	○					○	○	○	○	△
Original Set indicator									○	○	○	○	○	○	○	○	△

A press on the push switch 3 moves the LED code in the direction of -, thereby moving the stop position to the left by 0.5 mm.

A press on the push switch 2 moves the LED code in the direction of +, thereby moving the stop position to the right by 0.5 mm.

Note 1:

○ indicates that the LED is on.

△ indicates that the LED is flashing.

Note 2:

For -10,-9, and -8 and 8, 9, and 10, you cannot identify a specific code; however, a press on the push switch does change the setting.

Table 5-105

COPYRIGHT © 1996 CANON INC.

CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

b. Manual Feed

1) Shift bits 1, 5 and 6 of the DIP switch on the RF controller PCB to ON.

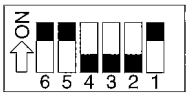


Figure 5-120

2) Press the push switch 1 on the RF controller PCB.
3) Place an A4 or LTR original on the manual feeding tray. Then the original is picked up and stopped on the copyboard glass.
4) Open the RF slowly, and measure distance A indicated in Figure 5-121; then, close the RF slowly.

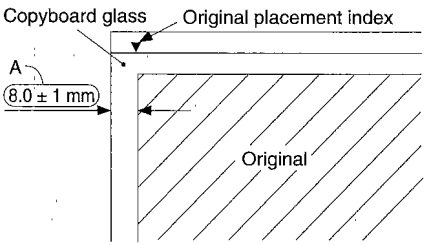


Figure 5-121

5) Use the push switches 2 and 3 on the RF controller PCB to adjust the stop position; each press on the switch changes the timing at which the belt motor (M3) stops by 0.5mm. You can check the change by referring to the LED code (Table 5-107).
When you have pushed the push switch 2 or 3 as many times as necessary, press the push switch 1 once to discharge the original and to store the optimum value.

COPYRIGHT © 1996 CANON INC.

Push switch	Direction of stop position
PUSH SW 2	left (delaying the motor stop timing).
PUSH SW 3	right (advancing the motor stop timing).

Table 5-106

Example

If the dimension A is 10 mm, press the push switch 2 four times, and press the push switch 1 once to discharge the original and store the new setting.

	-10,-9,-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8,9,10
LED1	△	○		○		○		○		○		○		○		○	△
LED2			○	○			○	○			○	○			○	○	△
LED3					○	○	○	○					○	○	○	○	△
Original Set indicator									○	○	○	○	○	○	○	○	△

A press on the push switch 3 moves the LED code to move in the direction of 0, thereby moving the original stop position to the right.

A press on the push switch 2 moves the LED code in the direction of +, thereby moving the original stop position to the left.

Note 1:

○ indicates that the LED is on.

△ indicates that the LED is flashing.

Note 2:

For -10, -9, and -8 and 8, 9, and 10, you cannot identify a specific code; however, a press on the push switch does change the setting.

Table 5-107

COPYRIGHT © 1996 CANON INC.

CANON RDF-E1 REV.1 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

④ Adjusting the Horizontal Registration

In this adjustment, you will be adjusting the horizontal registration of the original on the copyboard glass, and you need to make the adjustment for each pick-up position. For the RDF-E1, you will be making the adjustment by measuring the position of the image on a copy.

a. Left Pick-Up

1) Prepare a chart using an A4 or LTR sheet.

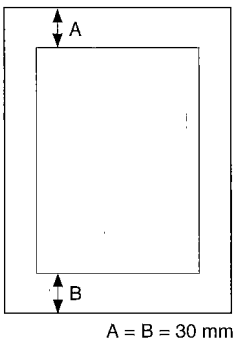


Figure 5-122

2) Open the sub tray.
3) Place the chart on the original tray.
4) Make two to three copies in DIRECT.
5) Measure the dimensions A and B on one of the copies you made in step 4).

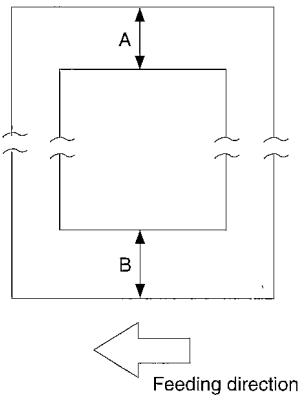


Figure 5-123

6) Close the sub tray.
7) Loosen the two tray registration screws.
8) Move the side tray to the front and the rear according to the measurements taken in step 5) so that A and B are identical.

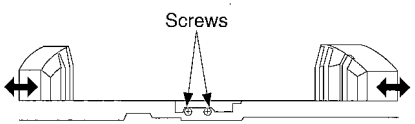


Figure 5-124

if A > B	move the tray to the front.
if A < B	move the tray to the rear.

Table 5-108

9) Tighten the two tray registration screws.

COPYRIGHT © 1996 CANON INC.

b. Manual Feed Pick-Up

1) Using an A4 or LTR sheet, prepare a chart as shown in Figure 5-125.

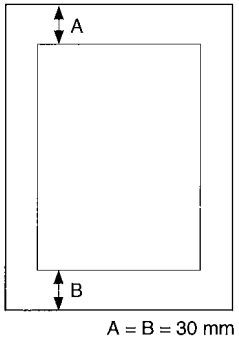


Figure 5-125

2) Open the manual feed tray.
3) Place the chart on the manual feed tray, and make two to three copies in DIRCT.
4) Measure the distances A and B on one of the copies made in step 3).

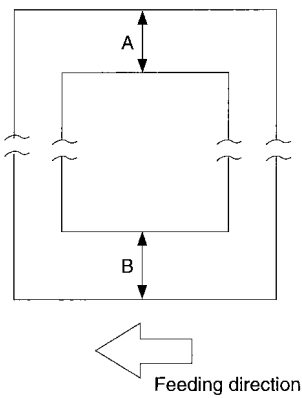


Figure 5-126

5) Loosen the tray fixing screw.
6) Move the manual feed tray to the front or the rear according to the dimensions measured in step 4) so that A and B are identical.

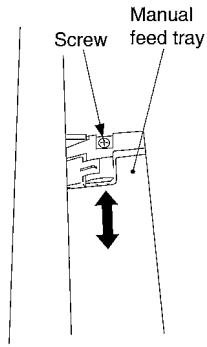


Figure 5-127

if A > B	move the tray to the front.
if A < B	move the tray to the rear.

Table 5-109

7) Tighten the manual tray screw.

COPYRIGHT © 1996 CANON INC.

2. Positioning the Stopper Solenoid (SL1)

1) With the solenoid open, measure the gap A between the end of the stopper plate ① and the metal plate ② of the pick-up guide. (You need not go to the next step if the gap A is 14.3 ±0.2 mm.)

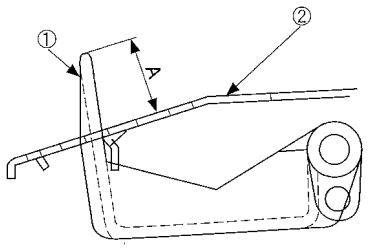


Figure 5-128

2) Remove the two screws, and disconnect the connector; then, remove the original tray.
3) Remove the two screws ④, and remove the guide plate ③ of the pick-up paper guide.

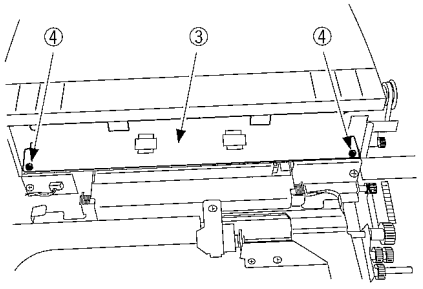


Figure 5-129

4) Loosen the two fixing screws ⑤ on the solenoid.
5) Slide the solenoid ⑥, and adjust the gap A.

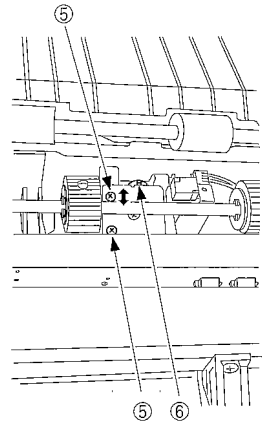


Figure 5-130

6) With the solenoid engaged, make sure that the end of the stopper plate ⑦ is fully below the metal plate ⑧ of the pick-up guide.

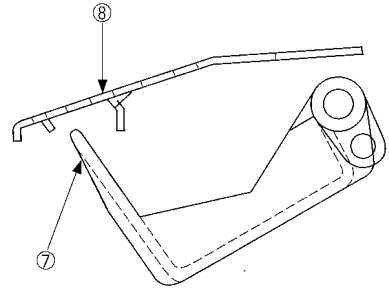


Figure 5-131

COPYRIGHT © 1996 CANON INC.

3. Adjusting the Position of the Paper Retaining Solenoid 1 (SL2)

1) Raise the original tray (by DIP SW on the RF controller PCB).
2) Turn the pick-up roller so that its cut side faces up.

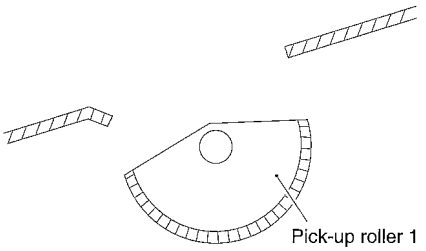


Figure 5-132

3) Loosen the two solenoid fixing screws.
4) Push in the steel rod of the stopper solenoid (SL2) fully.

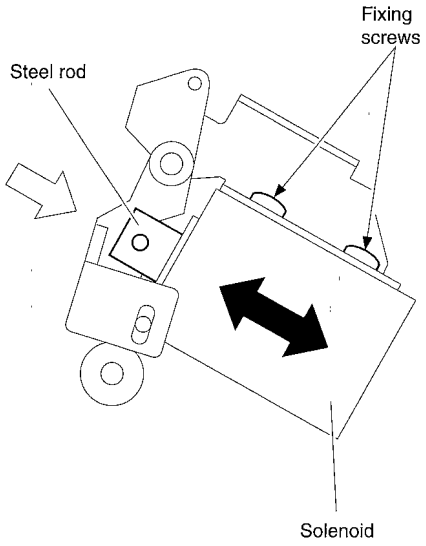


Figure 5-133

5) Slide the solenoid so that the stopper plate 1 comes into contact with the top face of the original tray when its steel rod is fully pushed in.

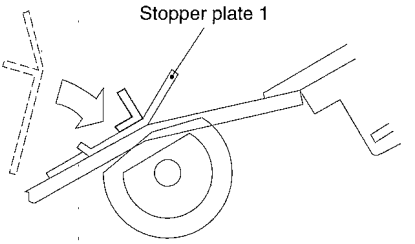


Figure 5-134

6) Tighten the two screws to fix the solenoid in place.

COPYRIGHT © 1996 CANON INC.

4. Adjusting the Position of the Paper Deflecting Solenoid (SL3)

1) Loosen the solenoid fixing screw.
2) Slide the solenoid (SL3) so that the bar ① and the face A of the paper deflecting plate match when the steel rod of the solenoid is pushed in with the paper deflecting plate pushed down in the direction of arrow A.

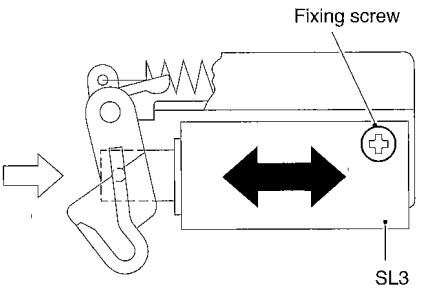


Figure 5-135

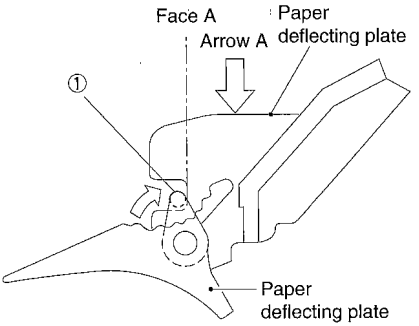


Figure 5-136

3) Tighten the screw, and fix the solenoid in place.

5. Adjusting the Position of the Original Jogging Solenoid (SL4)

1) Fix the solenoid (SL4) in place so that the original jogging plate protrudes from the tray fixed wall by 1 mm.

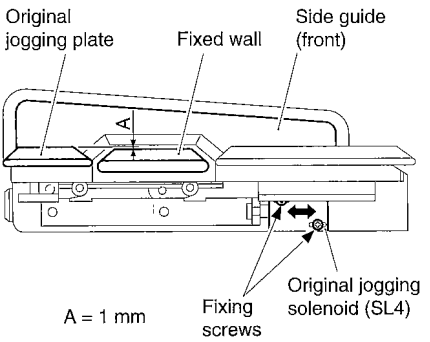


Figure 5-137

COPYRIGHT © 1996 CANON INC.

6. Adjusting the Gap for the Tray Side Guide

1) Remove the original tray.
2) Slide the side guide so that it clicks to the A4 or LTR index.
3) Loosen the side guide fixing screw ①.

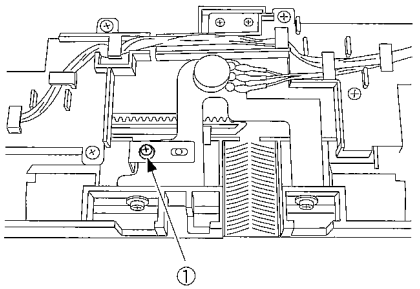


Figure 5-138

4) Taking care that the side guide will not be out of place, slide it so that the tray gap is 'paper width + 1 mm'.
5) Tighten the two side guide fixing screws.
6) Install the original tray.

7. Adjusting the Height of the Magnet

1) Make sure that the two rubber feet and the two magnets at the RF front come into contact with the copyboard when the RF is closed.
2) If they fail to come into contact at the same time, loosen the magnet adjusting screws to adjust the height of the magnets.

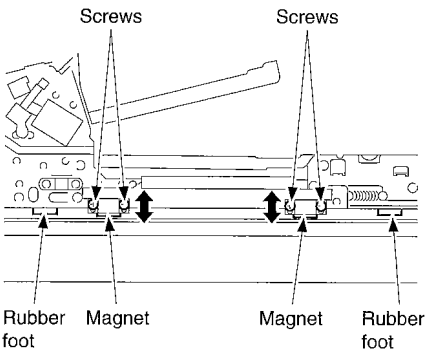


Figure 5-139

3) Tighten the mounting screws on the magnets.

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

8. Adjusting the Separation Belt Tension (left pick-up)

You will need to adjust the tension of the separation belt if separation faults occur as a result of wear on the separation belt or the feeding roller.

Outline

You will have to measure the feeding force of the separation belt when adjusting its tension. The feeding power changes when the adjusting roll is turned; measure the feeding force at the front and the rear sections of the separation belt (of the three sections of the belt.)

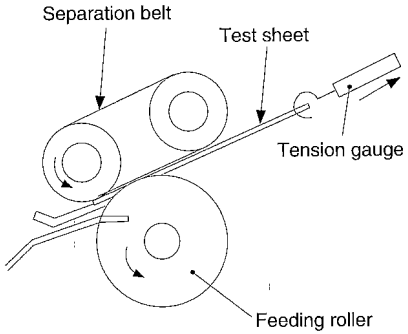


Figure 5-140

Making Adjustments

1) Prepare a test sheet for measuring the feeding power. (Use 64 g/m² or 80 g/m² paper.)

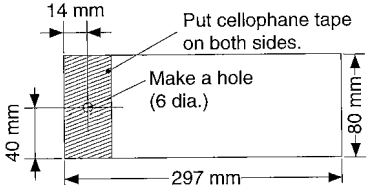


Figure 5-141

2) Turn off the copier, and remove the PCB cover from the RF (1 screw).

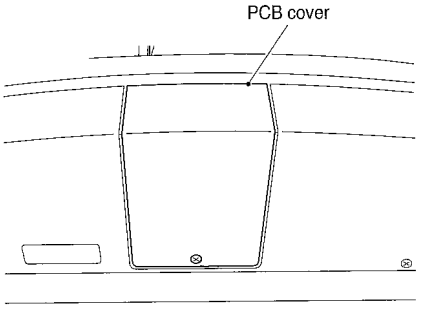


Figure 5-142

3) Open the sub tray.

Caution:
You must open the sub tray.

4) Shift bits 4 and 5 of the DIP switch on the RF controller PCB to ON (separation/feeding roller cleaning mode).

Figure 5-143

COPYRIGHT © 1996 CANON INC.

5) Turn on the copier.
6) Press the push switch 1 on the RF controller PCB. Let the test sheet you have prepared drawn into the separation belt assembly, and measure the feeding power at two sections of the separation belt (front, rear).

Caution:

1. You must make sure that the test sheet is in contact with the three sections of the separation belt.
2. Be sure to pull straight out the test sheet along the separation belt.

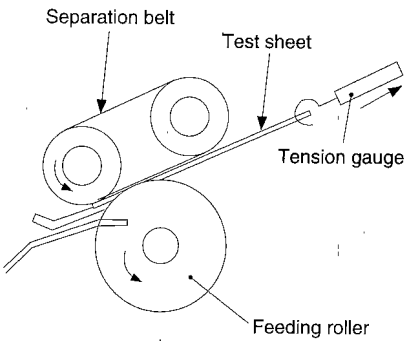


Figure 5-144

7) If the feeding force of the separation assembly is not as indicated in Table 5-110, loosen the screw with a hex wrench.

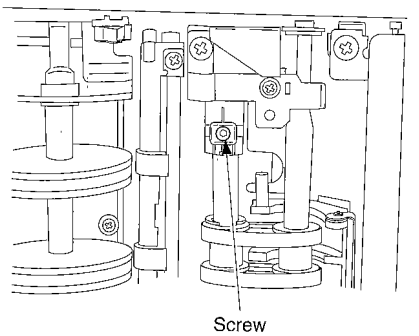


Figure 5-145

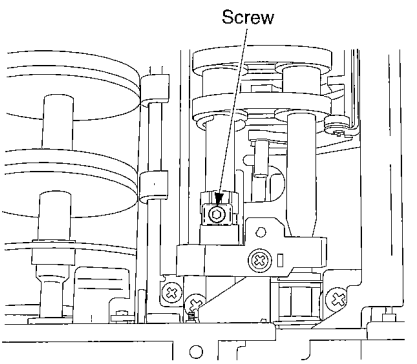


Figure 5-146

64 g/m² paper	80 g/m² paper
150 to 200 (g)	200 to 300 (g)

Table 5-110

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

8) Turn the adjusting roll according to the measurements taken.

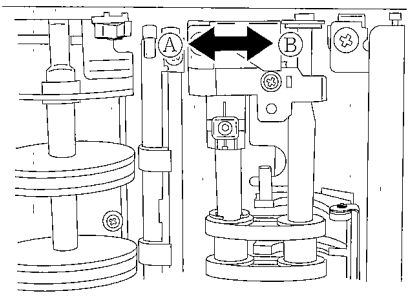


Figure 5-147

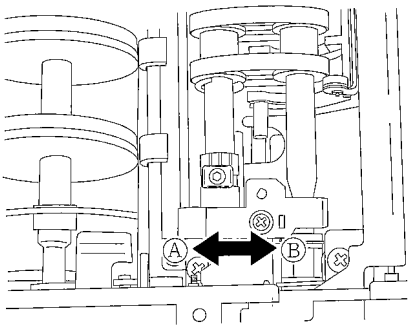


Figure 5-148

Turn in the direction of A	decreases the feeding force
Turn in the direction of B	increases the feeding force

Table 5-111

9) Tighten the screw, and measure the feeding force once again.

COPYRIGHT © 1996 CANON INC.

B. Electrical

1. Adjusting the Sheet Gap in Page Composition Mode (left pick-up)

- You must have adjusted the original stop position before adjusting the sheet gap for page composition mode.

1) Open the sub tray.
2) Shift bits 2, 5, and 6 on the DIP switch to ON.

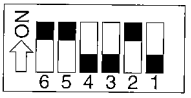
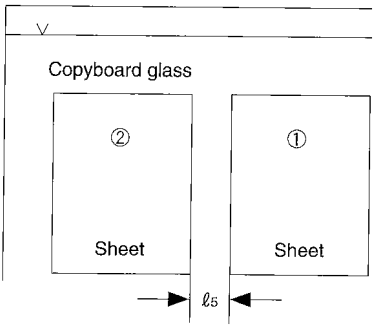


Figure 5-149

3) Place two sheets of A4 or LTR paper on the original tray.
4) Push the push switch 1 on the RF controller PCB once so that the sheets will be picked up and stopped on the copyboard glass.
5) Open the RF slowly, and measure the gap between the two sheets of copy paper; then, close the RF slowly.
6) To adjust the gap between sheets, you will be using the push switches 2 and 3 on the RF controller PCB; a press on each switch changes the stop position of the sheet (Figure 5-150) by 0.5 mm, thereby changing the sheet gap. (The change may be checked by the LED codes shown in Table 5-113.)
When you have pressed the push switch 2 or 3 as many times as necessary, push the push switch 1 once to discharge the sheets and store the new setting.



standard gap: $\ell_5 = 0 \pm 3$ mm

Figure 5-150

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

Relationship between the Push Switches and the Gap

Push switch	Gap
PUSH SW 2	increases
PUSH SW3	decreases

Table 5-112

Example

If the gap is 4 mm, press the push switch 3 eight times, and push the push switch 1 once to discharge the sheets and store the new setting.

4 ÷ 0.5 (adjustment pitch) = 8 (times)

7) Close the sub tray.

	-10,-9,-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8,9,10
LED1	△	○		○		○		○		○		○		○		○	△
LED2			○	○			○	○			○	○			○	○	△
LED3					○	○	○	○					○	○	○	○	△
Original Set indicator									○	○	○	○	○	○	○	○	△

A press on the push switch 3 moves the LED code in the direction of -, thereby decreasing the gap by 0.5 mm.

A press on the push switch 2 moves the LED code in the direction of +, thereby increasing the gap by 0.5 mm.

Note 1:

○ indicates that the LED is on.

△ indicates that the LED is flashing.

Note 2:

For -10, -9, and -8 and 8, 9, and 10, you cannot identify a specific code; however, a press on the push switch does change the setting.

Table 5-113

COPYRIGHT © 1996 CANON INC.

2. Removing the Skew

You must make this adjustment whenever you have replaced the RF controller PCB, registration sensor (S3), or the skew sensor 1 (S4).

1) Open the sub tray.
2) Shift bits 1, 2, 3, 5, and 6 on the DIP switch to ON.

Figure 5-151

3) Place the AF Test Sheet (FY9-9081) on the original tray. (If the Test Sheet is not at hand, substitute an A4/LTR 64 g/m2 sheet.)
4) Push the push switch 1 on the RF controller PCB once.
5) The sheet will be recirculated several times while the RF executes automatic adjustment. (Thereafter, the RF stops, indicating that the adjustment is finished.)

Caution:
You must first clean the sensors before removing the skew.

3. Executing Sensor Initial Adjustment

Make adjustments whenever you have replaced the RF controller PCB or any of the following sensors:

- original sensor 1 (S1)
- registration sensor 1 (S3)
- skew sensor 1 (S4)
- manual feed registration sensor (S19)
- image leading edge sensor (S20)

1) Prepare a single sheet of solid black paper (A4/LTR).

Caution:
Make sure that the leading or trailing edge margin is 3 mm or less; otherwise, the solid black portion may not cover the original sensor 1 (S1).

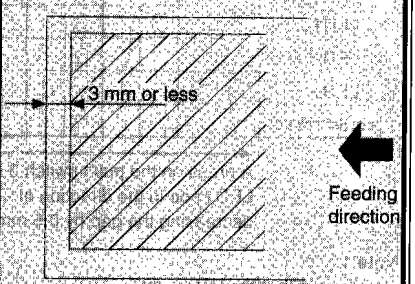


Figure 5-152

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

2) Make sure there is not paper in the feeding path.
3) Close the sub tray.
4) Set the solid black paper on the original tray. (Make sure that the solid black side faces the bottom with the margin* to the left pick-up side.)
*3 mm or less.

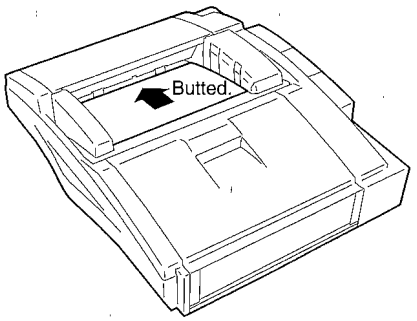


Figure 5-153

5) Remove the screw, and remove the PCB cover from the rear of the RF.
6) Shift bits 2, 3, 5, and 6 of the DIP switch to ON.

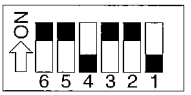


Figure 5-154

7) Press PUSH SW1 on the RF controller PCB once.
8) Wait while the RF automatically adjusts each sensor. (You can check the LEDs on the RF controller to find out which sensor is being checked; see Table 5-114.)
9) Wait about 10 sec until the automatic adjustment operation is over. (The LED indications make a single cycle and indicate the results of adjustment.)

<Guide to Indications>

The results of adjustment are indicated by the LEDs on the RF controller PCB. (See Table 5-114; they either remain on or flash.)

If they remain on for 1 sec and turns off after 0.5 sec, there is no problem in the sensor.

If they flash for 1 sec and turns off after 0.5 sec, there is dirt on the sensor. (The more dirt, the shorter the intervals.)

Note, however, there is no practical problem unless 'E411' is indicated.

The indication moves on to represent the next sensor after each adjustment operation.

Reference:

If the LEDs flash at noticeably shorter intervals for a particular sensor, clean the sensor and execute adjustment once again.

10) Press PUSH SW1 on the RF controller PCB to end the adjustment.

	LED3	LED2	LED1
Original sensor 1 (S1)			○
Registration sensor 1 (S3)		○	
Skew sensor 1 (S4)		○	○
Manual feed registration sensor (S19)	○		
Image leading edge sensor (S20)	○		○

Table 5-114

COPYRIGHT © 1996 CANON INC.

4. Adjusting the Original Width (AB paper configuration)

The width of an original is checked by a slide volume. Adjust it as follows:

1) Remove the RF PCB cover.
2) Shift bits 3, 4, 5, and 6 on the DIP switch to ON.

Figure 5-155

3) Set the side guide to the A4 position.
4) Press the push switch 1 on the RF controller PCB once.
5) Set the side guide to the A4R position.
6) Press the push switch 1 on the RF controller PCB.

Caution:

1. If LED2 and LED3 are flashing during adjustment, the adjustment is not successful. Check the slide volume and the way it is installed.
2. You must adjust it either for the AB configuration or for the LTR configuration.

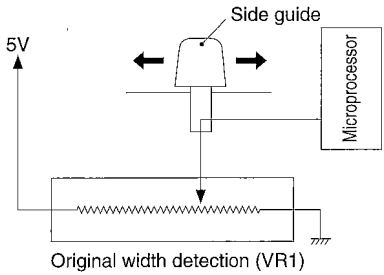


Figure 5-156

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.1 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

5. Adjusting the Original Width (LTR paper configuration)

The width of an original is checked by a slide volume. Adjust it as follows:

1) Remove the RF PCB cover.
2) Shift bits 1, 2, 4, 5, and 6 on the DIP switch to ON.

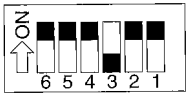


Figure 5-157

3) Set the side guide to the LTR position.
4) Press the push switch 1 on the RF controller PCB once.
5) Set the side guide to the LTRR position,
6) Press the push switch 1 on the RF controller PCB.

Caution:

1. If LED2 and LED3 are flashing during adjustment, the adjustment is not successful. Check the slide volume and the way it is installed.
2. You must adjust it either for the AB configuration or for the LTR configuration.

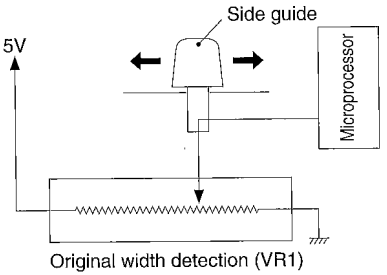


Figure 5-158

COPYRIGHT © 1996 CANON INC.

II. TROUBLESHOOTING

A. Troubleshooting by Malfunction

1. E400

Cause	Step	Checks	YES/NO	Action
	1	Turn off and then on the power switch. Is the problem corrected?	YES	End. (Check the wiring between the copier's DC controller PCB and the RF controller PCB.)
5V power supply	2	Set the meter to the 20VDC range, and connect the + probe to TP2 and the - probe to the copier's ground. Is the voltage about 5 V?	NO	Replace the RF controller PCB.
Wiring	3	Set the meter to the 200VDC range, and connect the + probe to J14-7 and the - probe to J14-8 on the RF controller PCB. Is the voltage about 24 V?	NO	Check the wiring used to supply power from the copier.
RF controller PCB	4	Replace the RF controller PCB. Is the problem corrected?	YES	End.
			NO	Replace the copier's DC controller PCB.

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

2. E401

Cause	Step	Checks	YES/NO	Action
Pick-up roller home position sensor (S8)	1	Set the meter to the 20VDC range, and connect the + probe to J10-6 and the - probe to J10-5 on the RF controller PCB. Turn the flag (light-blocking plate) on the pick-up roller shaft by hand; is the voltage about 5 V when the flag is at the sensor and about 0.7 V or less when the flag is not at the sensor?	NO	Check the wiring from the pick-up roller home position sensor (S8) to the RF controller PCB; if normal, replace the pick-up roller home position sensor (S8).
Pick-up clock sensor (S9)	2	Set the meter to the 20VDC range, and connect the + probe to J10-12 and the - probe to J10-11 on the RF controller PCB. Does the voltage alternate between 5 V and 0.7 V or less when the clock disk is turned slowly?	NO	Check the wiring from the pick-up clock sensor (S9) and the RF controller PCB; if normal, replace the pick-up clock sensor (S9).
Pick-up motor (M1)	3	Set the tester to the 20VDC range, and connect the + probe to J18-2 and - probe to J18-1 on the RF controller PCB. Does the index of the reader swing when the Copy Start key is pressed?	YES	Check the wiring from the pick-up motor (M1) to the RF controller PCB; if normal, replace the pick-up motor (M1).
			NO	Replace the RF controller PCB.

COPYRIGHT © 1996 CANON INC.

3. E402

Cause	Step	Checks	YES/NO	Action
Belt motor clock sensor (S11)	1	Set the meter to the 20VDC range, and connect the + probe to J6-6 and the - probe to J6-5 on the RF controller PCB. Turn the clock disk slowly by hand; does the voltage alternate between 5 and 0.7 V or less?	NO	Check the wiring from the belt motor clock sensor (S11) to the RF controller PCB; if normal, replace the belt motor clock sensor (S11).
Belt motor (M3)	2	Disconnect J142 for the belt motor. Does electrical continuity exist between J142-3 and -4 and between J142-5 and -6?	YES	Check the wiring from the belt motor (M3) to the belt motor driver PCB and the wiring of the RF controller PCB; if normal, replace the belt motor.
			NO	Replace the RF controller PCB/belt motor driver PCB.

4. E403

Cause	Step	Checks	YES/NO	Action
Slip sensor (S10)	1	Set the meter to the 20VDC range, and connect the + probe to J7-9 and the - probe to J7-8 on the RF controller PCB. Turn the reversing roller slowly by hand; does the voltage alternate between 5 and 0 V?	NO	Check the wiring from the slip sensor (S10) to the RF controller PCB; if normal, replace the slip sensor (S10).
Reversing motor (M2)	2	Disconnect J142 for the reversing motor driver; does electrical continuity exist between J142-3 and -4 and between J142-5 and -6?	YES	Check the wiring from the reversing motor (M2) to the RF controller PCB; if normal, replace the reversing motor (M2).
			NO	Replace the RF controller PCB/reversing motor driver PCB.

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

5. E404

Cause	Step	Checks	YES/NO	Action
Delivery clock sensor (S12)	1	Set the meter to the 20VDC range, and connect the + probe to J6-9 and the - probe to J6-8 on the RF controller PCB. Turn the clock disk slowly by hand; does the voltage alternate between 5 and 0.7 V?	NO	Check the wiring from the delivery clock sensor (S12) to the RF controller PCB; if normal, replace the delivery clock sensor (S12).
Delivery motor (M5)	2	Set the meter to the 200VDC range, and connect the + probe to J4-1 and the - probe to J4-2 on the RF controller PCB. Is the voltage between 10 and 23 V when the Copy Start key is pressed?	YES	Check the wiring from the delivery motor (M5) to the RF controller PCB; if normal, replace the delivery motor (M5).
			NO	Replace the RF controller PCB.

6. E405

Cause	Step	Checks	YES/NO	Action
Pick-up clock sensor (S9)	1	Is the pick-up clock sensor (S9) normal?	NO	Check the wiring from the RF controller PCB to the sensor; if normal, replace the pick-up clock sensor (S9).
RF controller PCB			YES	Replace the RF controller PCB.

7. E407

Cause	Step	Checks	YES/NO	Action
Tray position sensor (S25)	1	Set the meter to the 20VDC range, and connect the + probe to J10-3 and the - probe to J10-2 on the RF controller PCB. Is the voltage about 5 V when the sensor is blocked and about 0 V when nothing blocks it?	NO	Check the wiring from the tray position sensor (S25) to the RF controller PCB; if normal, replace the tray position sensor (S25).
Tray up/down motor (M6)	2	Set the meter to the 200VDC range, and connect the + probe to J2-1 and the - probe to J2-2 on the RF controller PCB. Is the voltage 23 V when the Copy Start key is pressed?	YES	Check the wiring from the tray up/down motor (M6) to the RF controller PCB; if normal, replace the tray up/down motor (M6).
			NO	Replace the RF controller PCB.

COPYRIGHT © 1996 CANON INC.

8. E408

Cause	Step	Checks	YES/NO	Action
Feeding clock sensor (S22)	1	Set the meter to the 20VDC range, and connect the + probe to J13-6 and the - probe to J13-7 on the RF controller PCB. Turn the feeding motor (M8) slowly by hand; does the voltage alternate between 0.7 V or less and 5 V?	NO	Check the wiring from the RF controller to the feeding clock sensor (S22); if normal, replace the feeding clock sensor (S22).
Feeding motor (M8)	2	Disconnect J11 for the RF controller PCB. Does electrical continuity exist between J11-6 and -8 and between J11-7 and -9?	NO	Replace the feeding motor (M8).
RF controller PCB			YES	Replace the RF controller PCB.

9. E411

Cause	Step	Checks	YES/NO	Action
Sensor initial adjustment	1	Execute sensor initial adjustment by the DIP switch on the RF controller PCB. Is the problem corrected?	YES	End.
Sensor	2	Clean the sensor whose results of sensor initialization adjustment are not good, and execute sensor initial adjustment once again. Is the problem corrected?	YES	End.
Sensor	3	Replace the sensor whose results of sensor initial adjustment are not good. Is the problem corrected?	YES	End.
RF controller PCB			NO	Replace the RF controller PCB.

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

III. ARRANGEMENT AND FUNCTIONS OF ELECTRICAL PARTS

A. Photointerrupters

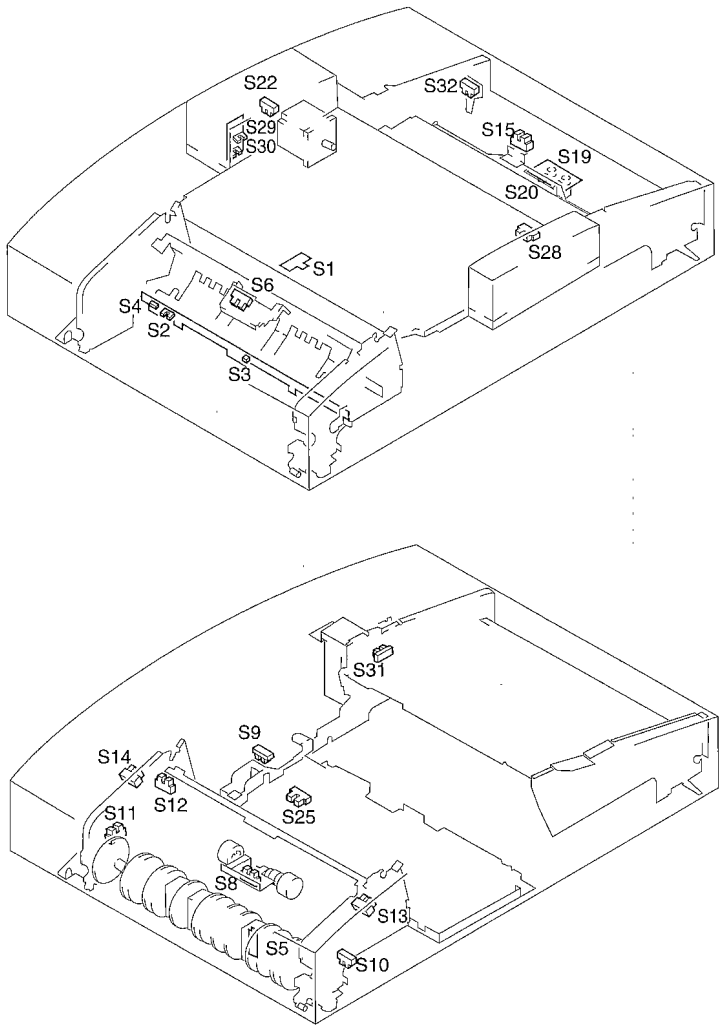


Figure 5-301

COPYRIGHT © 1996 CANON INC.

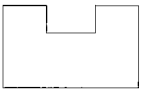
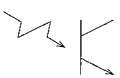
Symbol	Name	Notation	Description
	Photointerrupter	S2	detects pick-up 1
		S5	detects reversal
		S6	detects delivery
		S8	detects pick-up roller 1 home position
		S9	detects pick-up clock
		S10	detects slip
		S11	detects belt motor clock
		S12	detects delivery clock
		S13	detects left cover (front)
		S14	detects left cover (rear)
		S15	detects delivery 2
		S22	detects feeding motor clock
		S25	detects tray position
		S28	detects sub tray
		S29	detects recirculation
		S30	detects recirculation
		S31	detects RF open/closed
		S32	detects manual feed paper placement
	Phototransistor	S1	detects original
		S3	detects registration 1
		S4	detects skew 1
		S19	detects manual registration
		S20	detects image leading edge

Table 5-301

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

B. Solenoids, Clutches, Motors, Fans, and Volumes

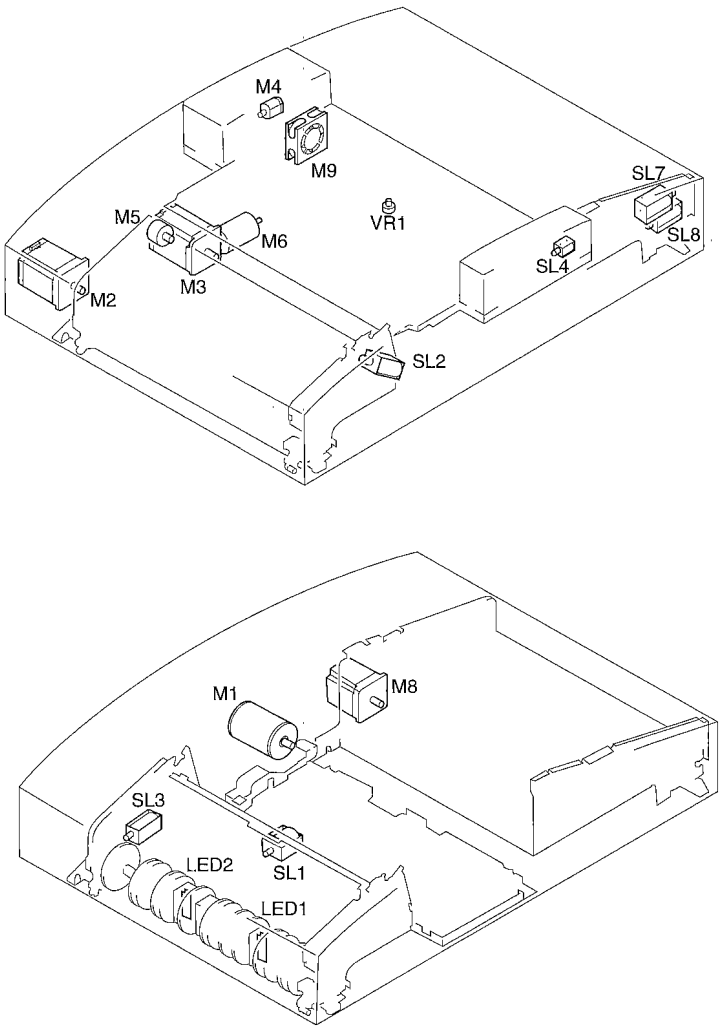


Figure 5-302

COPYRIGHT © 1996 CANON INC.

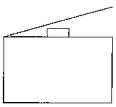
Symbol	Name	Notation	Description
	Solenoid	SL1	stopper 1
		SL2	paper retaining plate 1
		SL3	paper deflecting plate
		SL4	original jogging
		SL7	manual feed flapper
		SL8	paper base
	Motor	M1	pick-up
		M2	reversal
		M3	belt
		M4	recirculation
		M5	delivery
		M6	tray up/down
		M8	feeding
	Fan	M9	cooling fan
	Volume	VR1	detects original width
	LED	LED1	for registration sensor 1
		LED2	for skew sensor 1

Table 5-302

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

C. PCBs

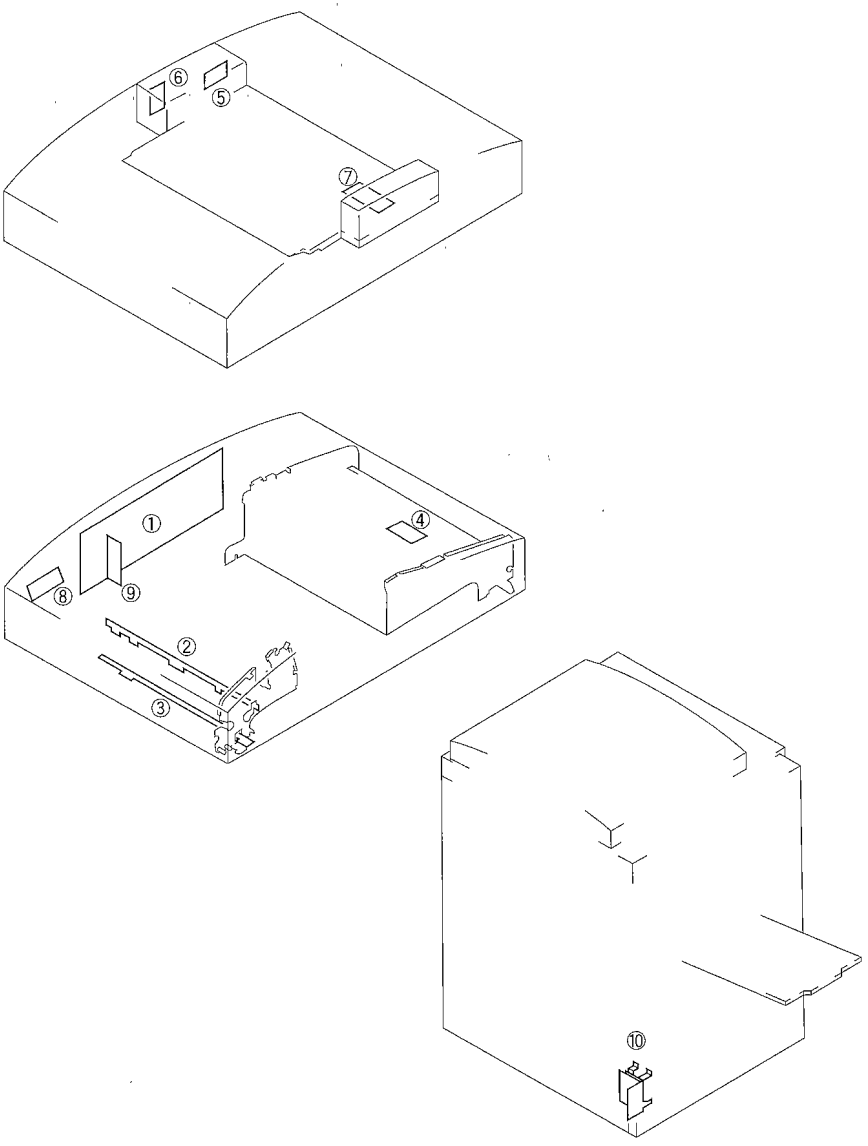


Figure 5-303

COPYRIGHT © 1996 CANON INC.

Ref.	Name	Description
①	RF controller PCB	controls sequence
②	Pick-up sensor 1 PCB	pick-up related sensor 1
③	Harness PCB	harness relay
④	Image leading edge sensor PCB	image leading edge sensor, manual feed sensor
⑤	Indicator LED PCB	LED indicator
⑥	Recirculation sensor PCB	recirculation sensor
⑦	Tray PCB	tray up/down, harness relay
⑧	Reversing motor driver PCB	reversing motor drive
⑨	Belt motor driver PCB	belt motor drive
⑩	Power supply PCB	DC power supply

Table 5-303

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.1 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

D. Light-Emitting Diodes (LED) and Switches by PCB

Of the LEDs and switches, those you will need in the field are discussed herein.

Caution:
Do not touch LEDs or switches that are not discussed herein; adjustment and checks using such LEDs and switches require high precision and special instruments.

1. RF Controller PCB

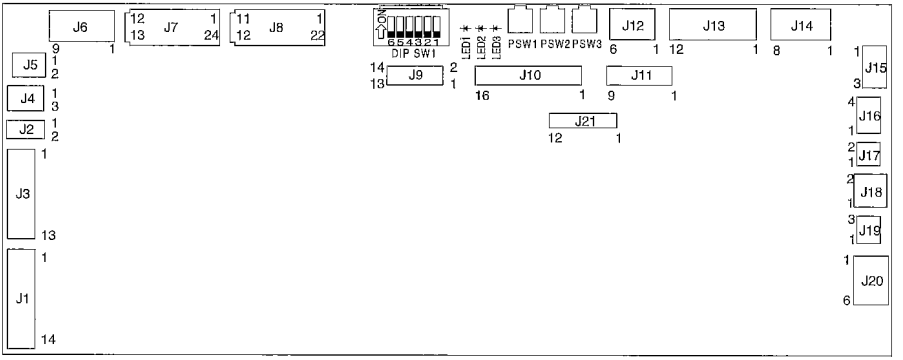


Figure 5-304

LED	Description
LED1 LED2 LDE3	Indicates state for various adjustments.

Table 5-304
LEDs on the RF Controller PCB

Switch	Description
PSW1	Used to execute various modes or store settings.
PSW2 PSW3	Used to change various adjustment settings.

Table 5-305
Switches on the RF Controller PCB

COPYRIGHT © 1996 CANON INC.

2. Indicator LED PCB

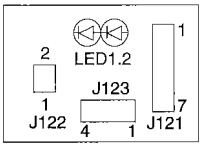


Figure 5-305

LED	Description
LEDs 1, 2 (Original Set indicator)	Indicates state for various adjustments (in combination with LEDs 1 through 3 on the RF controller PCB).

Table 5-306
LEDs on the Indicator LED PCB

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

3. List of DIP Switch Functions

Go through the table for an idea of the functions of the DIP switch (DIP SW) on the RF controller PCB. You must keep the copier off when changing the bits of the DIP switch.

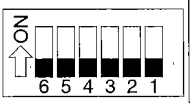
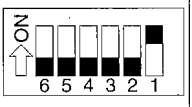
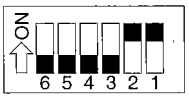
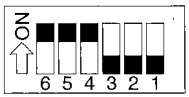
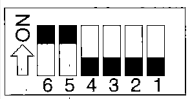
Item	Bit position	Description
Normal copying state		When all bits are off, the system assumes normal copying state.
One-sided original mode operation check		Each press on the push switch 1 repeats picking up and discharging an original.
Two-sided original mode operation check		Each press on the push switch 1 repeats picking up, reversing, and discharging an original.
Separation belt/feeding roller cleaning		The pick-up motor (M1) rotates, and the separation belt and the feeding roller are cleaned.
Normal mode original leading edge stop position adjustment		A press on the push switch 1 after placing an original causes the original to be picked up and stopped at the normal mode original leading edge stop position on the copyboard glass.

Table 5-307

COPYRIGHT © 1996 CANON INC.

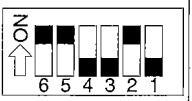
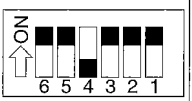
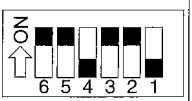
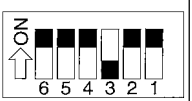
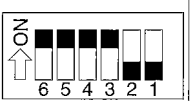
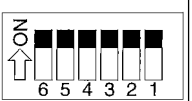
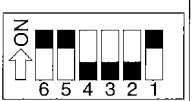
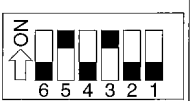
Item	Bit position	Description
Page composition mode sheet gap adjustment		A press on the push switch 1 after placing two originals causes the originals to be picked up and stopped at the page composition mode original leading edge stop position on the copyboard glass. A press on the push switch 2 in this condition increases the sheet gap by 0.5 mm; a press on the push switch 3 decreases the sheet gap by 0.5 mm. Press the push switch 2 or 3 as many times as necessary, and press the push switch 1 once to store the new setting.
Skew 1 sensor skew adjustment		Each press on the push switch 1 after placing an original causes the original to be circulated several times and automatic adjustment to take place. You must keep the sub tray open.
Sensor initial adjustment		A press on the push switch 1 adjusts the sensor (about ten or more sec).
Registration roller cleaning mode		A press on the push switch 1 after placing about ten originals cleans the roller automatically. If the sub tray is closed and A4/LTR originals are set, left/right pick-up operations will be executed in sequence.
Original width detection adjustment (inch paper configuration)		Set the original tray guide to the LTR position, and push the push switch 1. Next, set the original guide to the LTRR position, and push the push switch 1. Any error in adjustment causes LEDs 2 and 3 to flash.
Original width detection adjustment (AB paper configuration)		Set the original tray guide to the A4 position, and push the push switch 1. Next, set the original tray guide to the A4R position, and push the push switch 1. Any error in adjustment causes LEDs 2 and 3 to flash.
Back-up RAM initialization		A press on the push switch 1 initializes the RAM.
Original stop position adjustment mode (manual feed)		Press the switch 1 and then set an original on the manual feed tray, the RF automatically feeds the original to be stopped on the copyboard glass. And then press the switch 2/3 as necessary number of times. Press the switch 1, the RF delivers the original.
Tray up/down motor (M6) operation mode		When the switch 1 is pressed, the tray up/down motor turns. When the switch 1 is pressed again, the tray stops at the up or down position.

Table 5-308

COPYRIGHT © 1996 CANON INC.

IV. SELF DIAGNOSIS

A. Self Diagnosis

The microprocessor on the RF controller PCB is provided with a mechanism which automatically checks the state of the machine (sensors, in particular). When it identifies an error, it indicates the nature of the error on the copier's control panel in the form of a code.

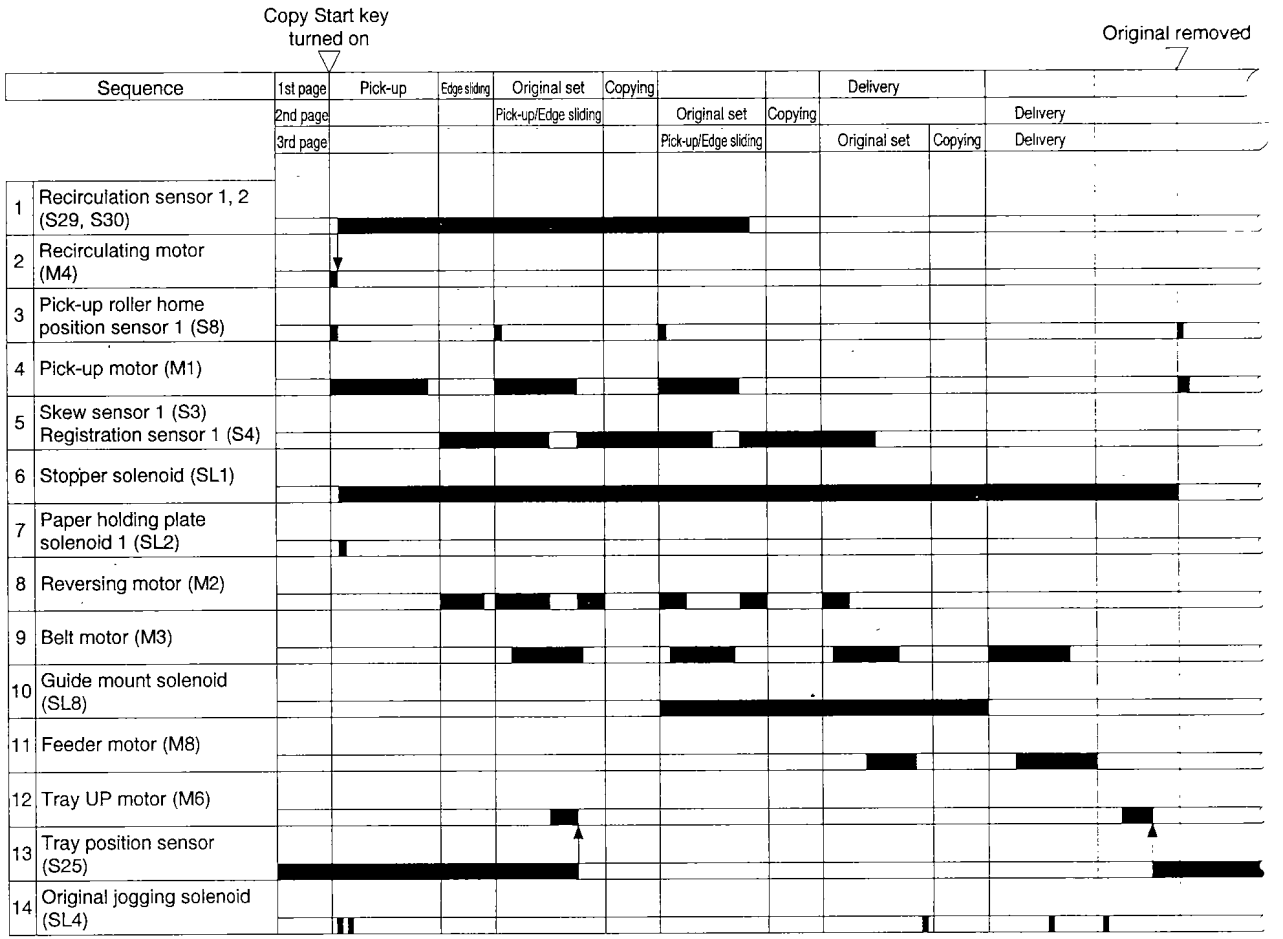
Code	Main cause	Description
E400	• Data communication (with copier)	• The communication is monitored at all times, and an error is identified when there is an interruption of 5 sec or more.
E401	• Pick-up motor (M1; faulty) • Pick-up roller home position sensor 1 (S8; faulty)	• The state of the sensor does not change when the pick-up motor has been driven for 2 sec or more.
E402	• Belt motor (M3; faulty) • Belt motor clock sensor (S11; faulty)	• The number of belt motor clock pulses is below a specific value for 100 ms.
E403	• Reversing motor (M2; faulty) • Slip sensor (S10; faulty)	• The number of slip clock pulses is below a specific value for 100 ms.
E404	• Delivery motor (M5; faulty) • Delivery motor clock sensor (S12; faulty)	• The number of delivery motor clock pulses is below a specific value for 200 ms.
E405	• Pick-up motor (M1; faulty) • Pick-up motor clock sensor (S9; faulty)	• The number of pick-up motor clock pulses is below a specific value for 200 ms.
E407	• Tray up/down motor (M6; faulty) • Tray position sensor (S25; faulty)	• The state of the sensor does not change when the tray up/down motor has been driven for 2 sec or more.
E408	• Feeding motor (M8; faulty) • Feeding motor clock sensor (S22; faulty)	• The number of feeding motor clock pulses is below a specific value for 100 ms.
E411	• Registration sensor 1 (S3; faulty) • Skew sensor 1 (S4; faulty) • Manual registration sensor (S19; faulty) • Image leading edge sensor (S20; faulty) • Original sensor 1 (S1; faulty)	• The output of each sensor is more than a specific value in the absence of paper.

Note:
1. When the self diagnosis mechanism has been activated, you may reset it by turning off the copier's power switch.
2. You may continue to make copies while the RF is out of order by opening the RF and placing the original on the copyboard glass.

COPYRIGHT © 1996 CANON INC.

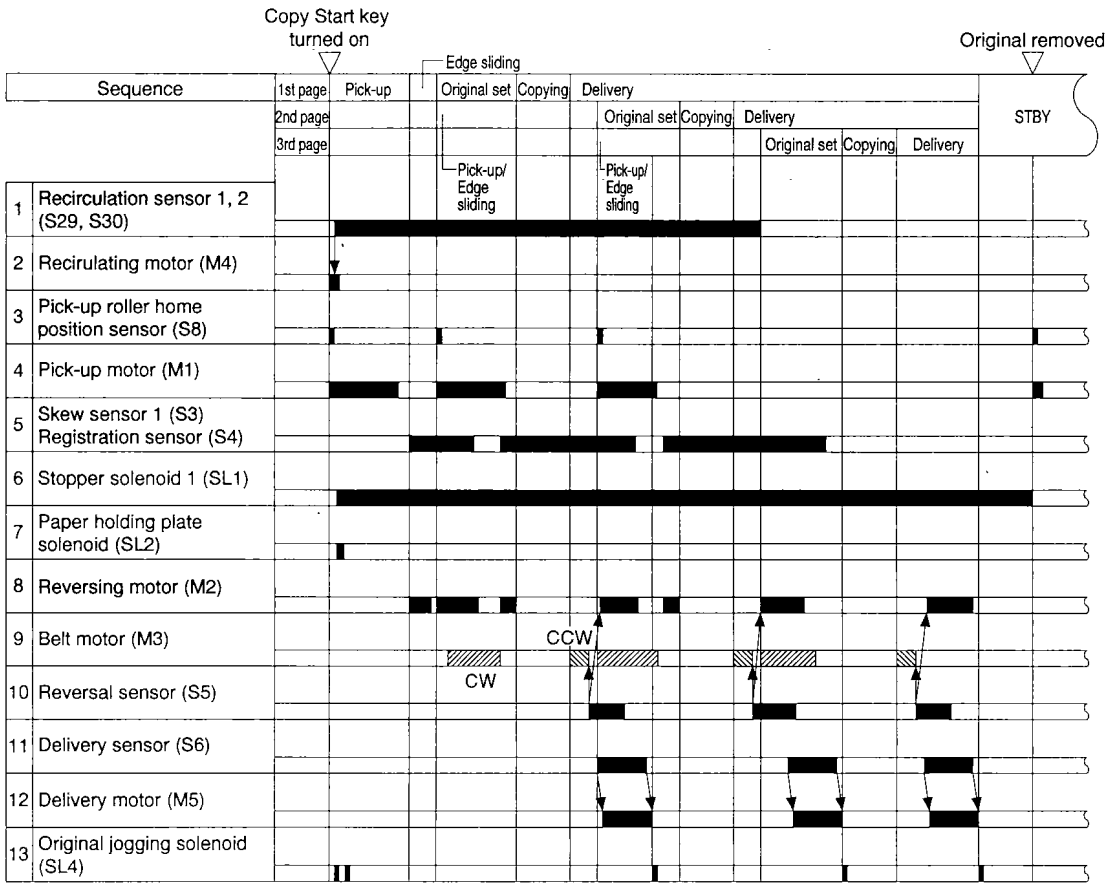
A. GENERAL TIMING CHART

1. A4, one-sided to one-sided copy, 3 copies (high-speed copying mode)



COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

2. A4, Left Pick-Up, one-sided to one-sided copy, 3 copies (switch-back mode)



COPYRIGHT © 1996 CANON INC. CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

B. SIGNALS AND ABBREVIATIONS

The following abbreviations are used to represent signals in this manual:

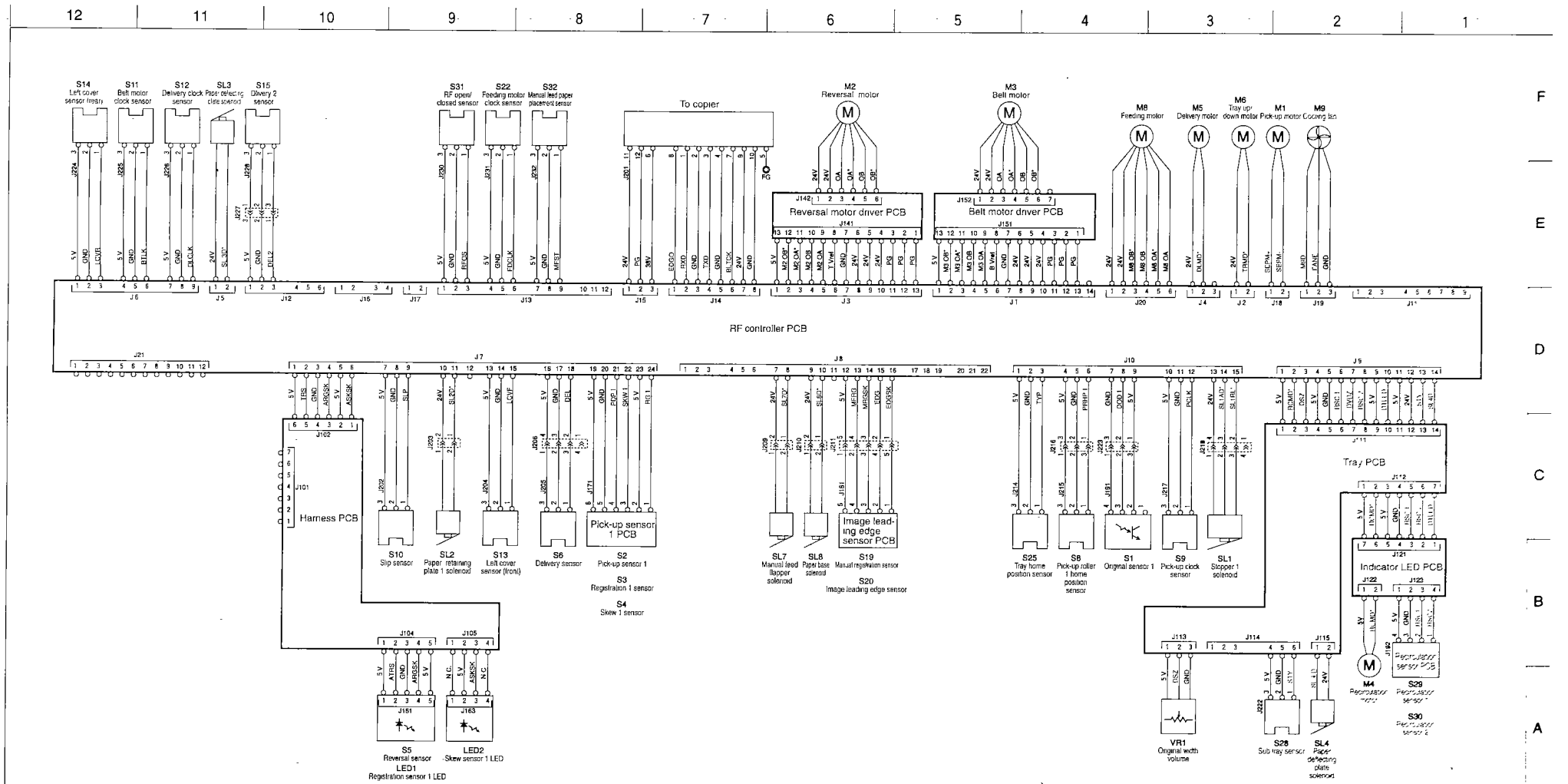
Reference:

The abbreviations within brackets are analog signals, which cannot be represented by '1' or '0'.

The remaining abbreviations are digital signals, which may be represented in terms of '1' and '0'.

BTLK	BELT MOTOR CLOCK DETECTION signal
DEL	DELIVERY DETECTION signal
DEL 2	DELIVERY 2 DETECTION signal
DLMD	DELIVERY MOTOR DRIVE command
DOD1	DOCUMENT 1 DETECTION signal
[DSZ]	DOCUMENT SIZE DETECTION signal
EDG	EDGE DETECTION signal
FDCLK	FEED MOTOR CLOCK DETECTION signal
LCVF	LEFT COVER DETECTION signal FRONT
LCVR	LEFT COVER DETECTION signal REAR
M9D	M9 DRIVE command
MFRG	MANUAL FEED REGISTRATION DETECTION signal
MFST	MANUAL FEED SET DETECTION signal
PCLK	PICK-UP MOTOR CLOCK DETECTION signal
PDP1	PAPER PICK-UP 1 DETECTION signal
PRHP1	PICK-UP ROLLER HOME POSITION 1 DETECTION signal
RCMD	RECYCLE MOTOR DRIVE command
RFOS	RF OPEN DETECTION signal
RG1	REGISTRATION 1 DETECTION signal
RSC1	RECYCLE LEVER 1 DETECTION signal
RSC2	RECYCLE LEVER 2 DETECTION signal
SKW1	SKEW 1 DETECTION signal
SL1AD	SOLENOID 1 DRIVE command
SL1RD	SOLENOID 1 DRIVE command RELEASE
SL2D	SOLENOID 2 DRIVE command
SL3D	SOLENOID 3 DRIVE command
SL4D	SOLENOID 4 DRIVE command
SL7D	SOLENOID 7 DRIVE command
SL8D	SOLENOID 8 DRIVE command
SLP	SLIP DETECTION signal
STY	SUB-TRAY DETECTION signal
TRMD	TRAY MOTOR DRIVE command
TRS	TRANSLATION DETECTION signal
TRY	TRAY POSITION DETECTION signal

COPYRIGHT © 1996 CANON INC.

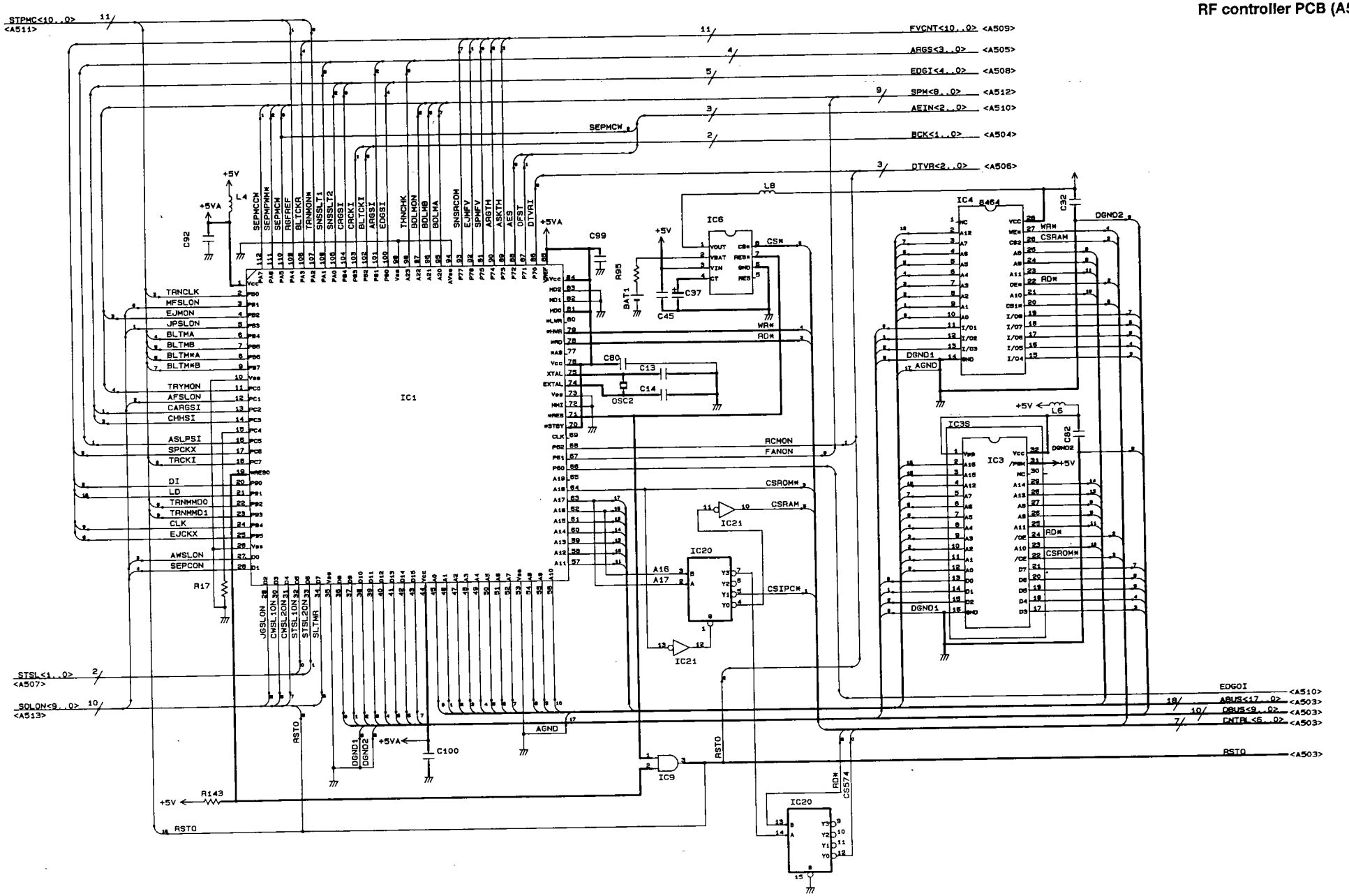


COPYRIGHT © 1996 CANON INC.

CANON RDF-E1 REV.1 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

D. RF CONTROLLER PCB CIRCUIT DIAGRAM

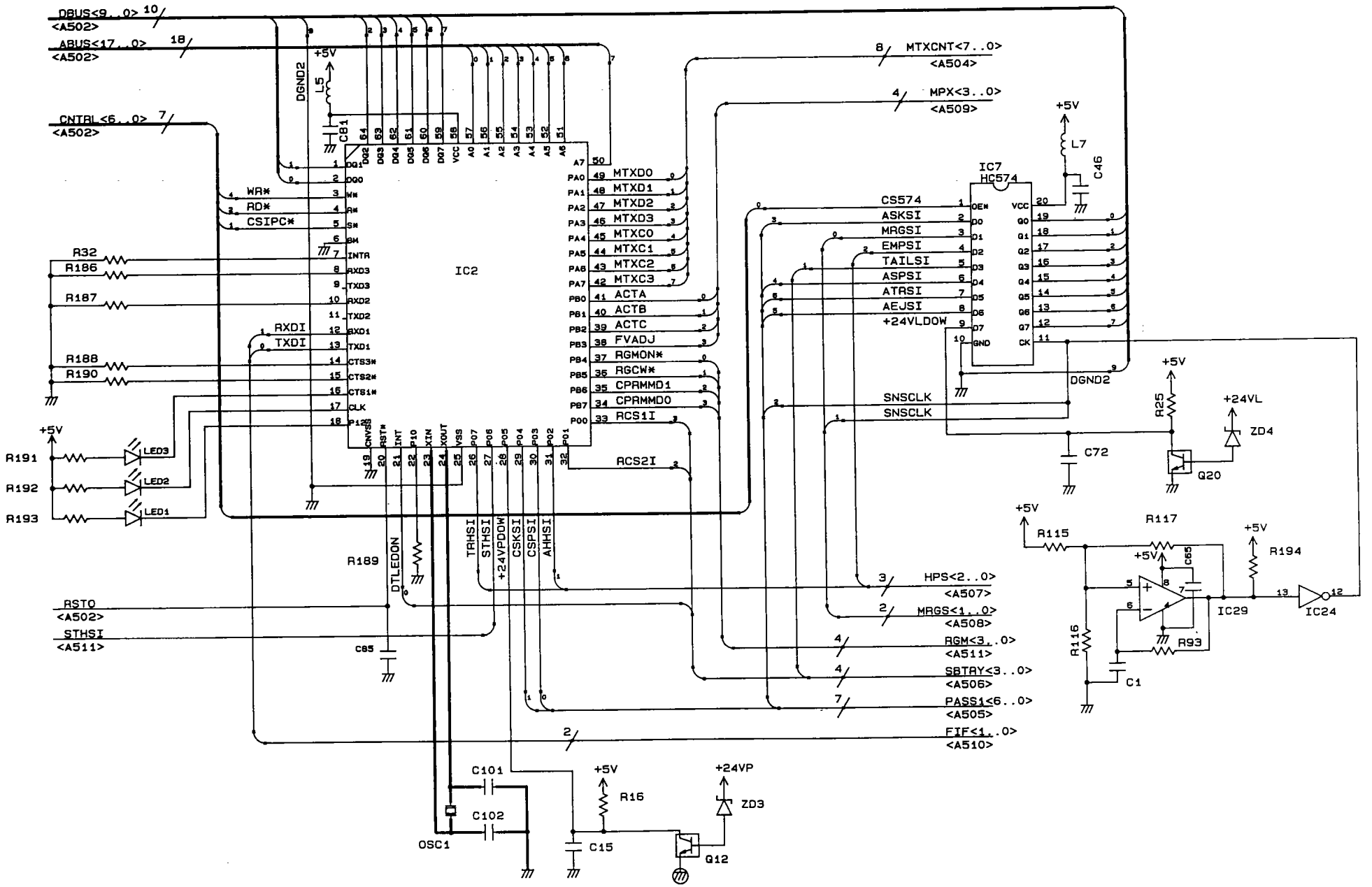
RF controller PCB (A502)



COPYRIGHT © 1996 CANON INC.

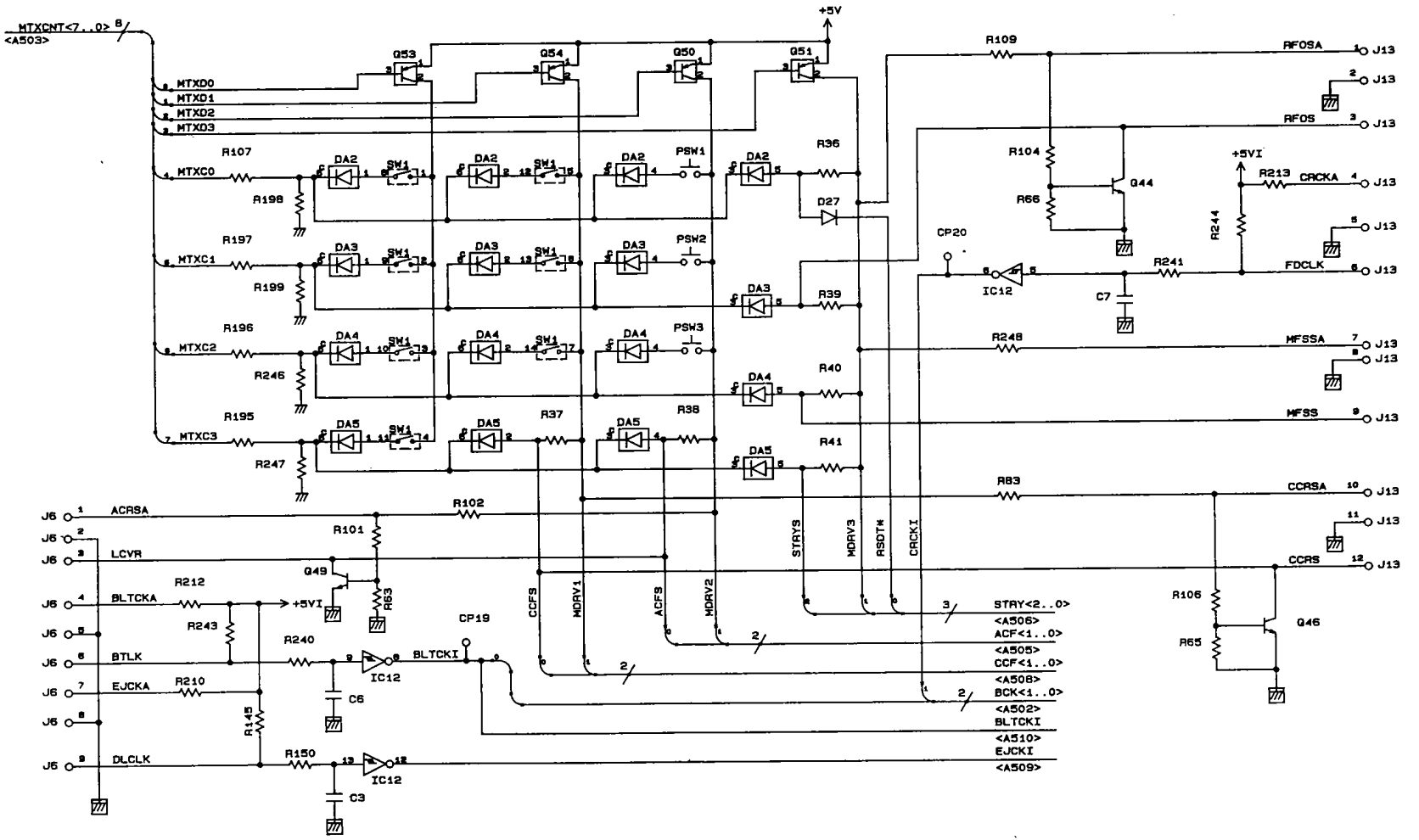
CANON RDF-E1 REV.1 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

RF controller PCB (A503)



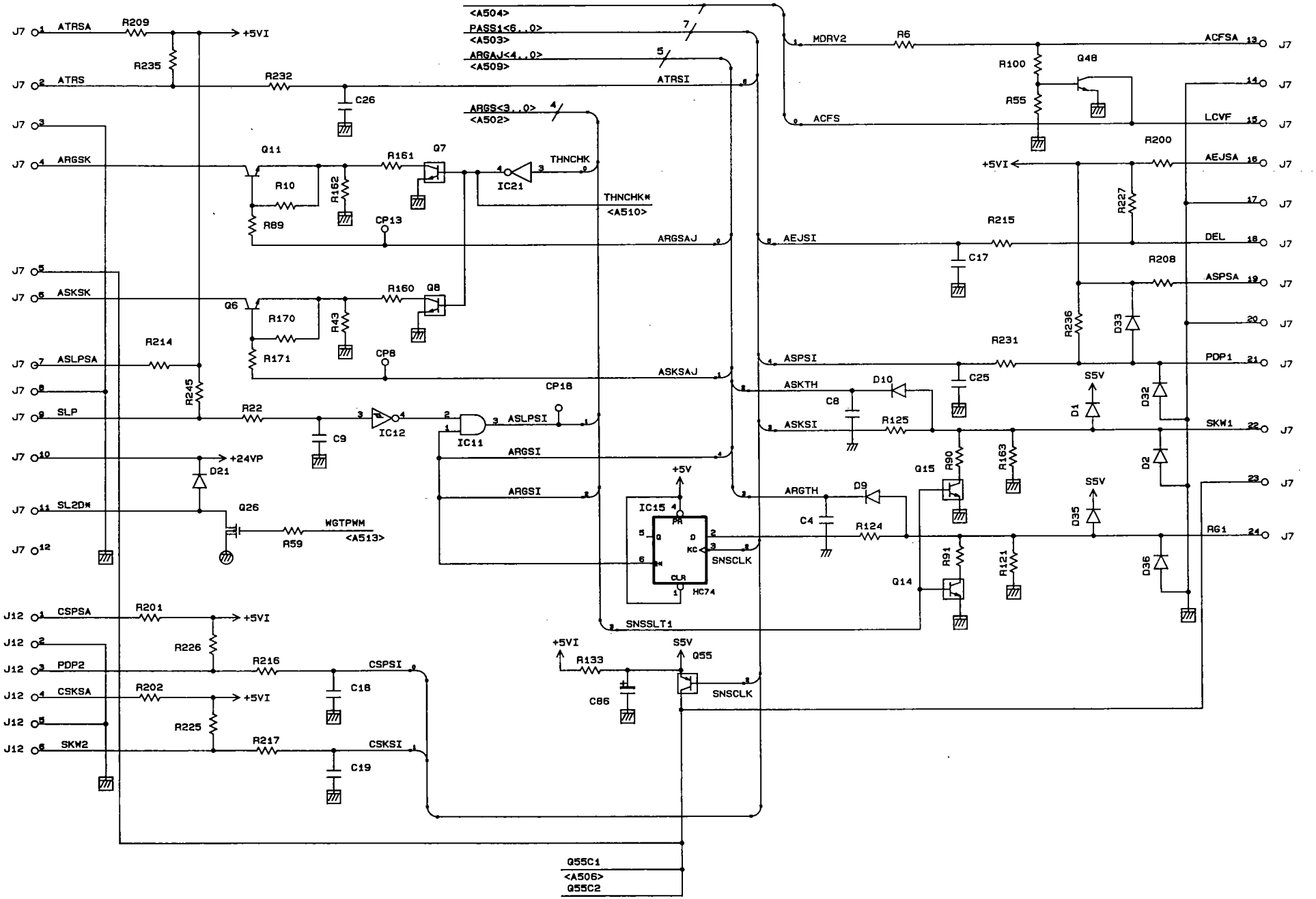
COPYRIGHT © 1996 CANON INC.

CANON RDF-E1 REV.1 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)



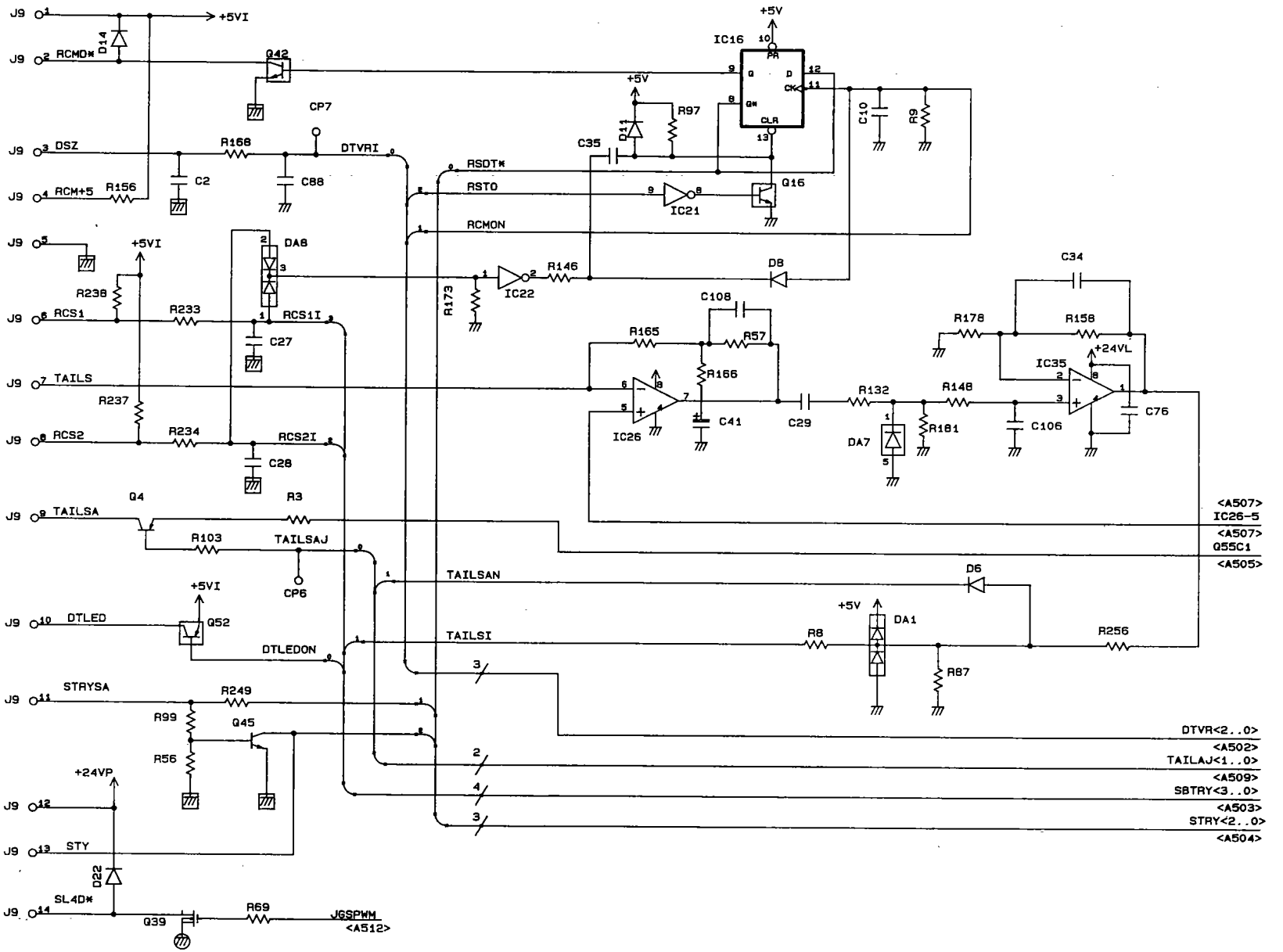
COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.1 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

RF controller PCB (A505)

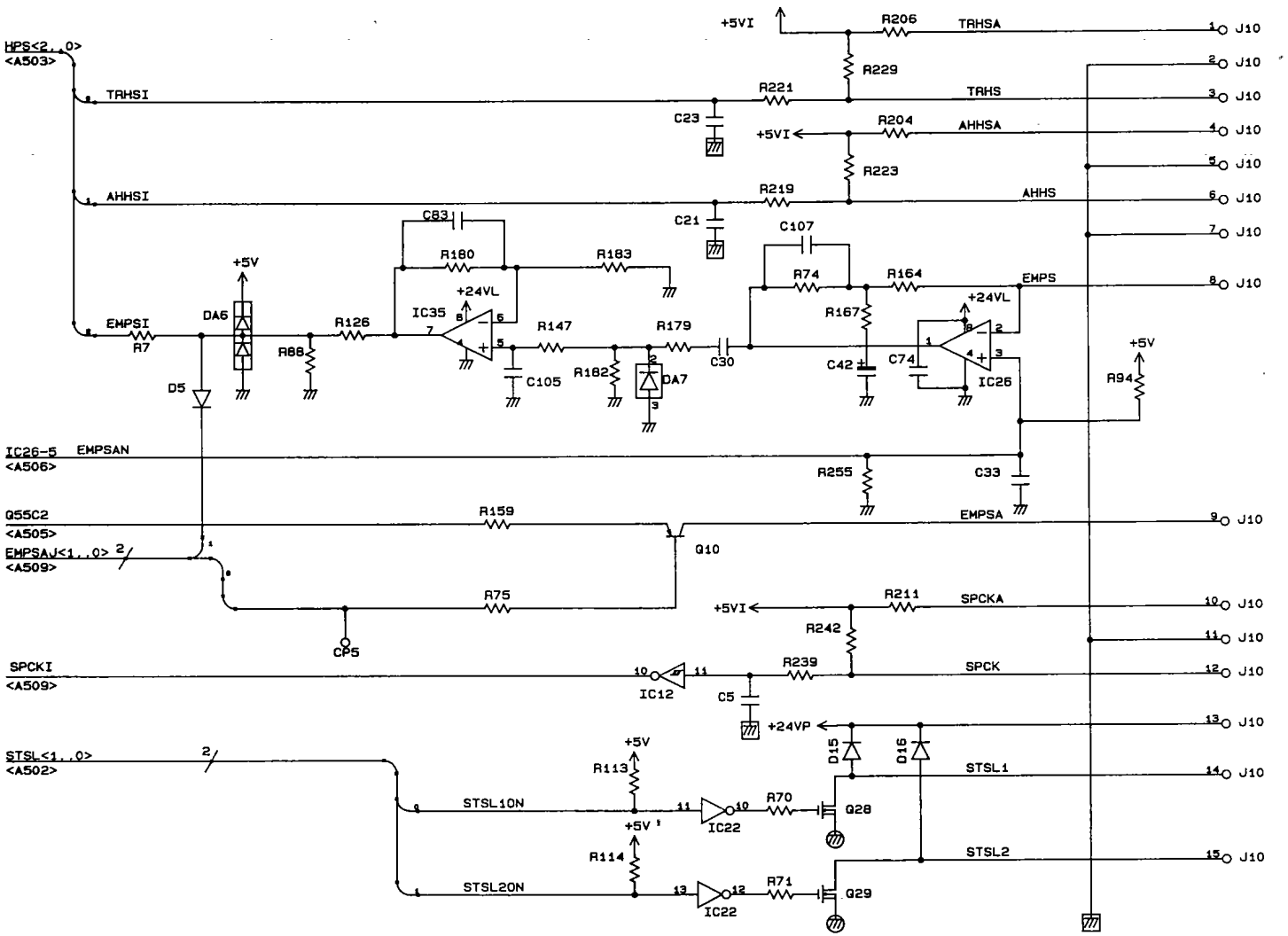


COPYRIGHT © 1996 CANON INC.

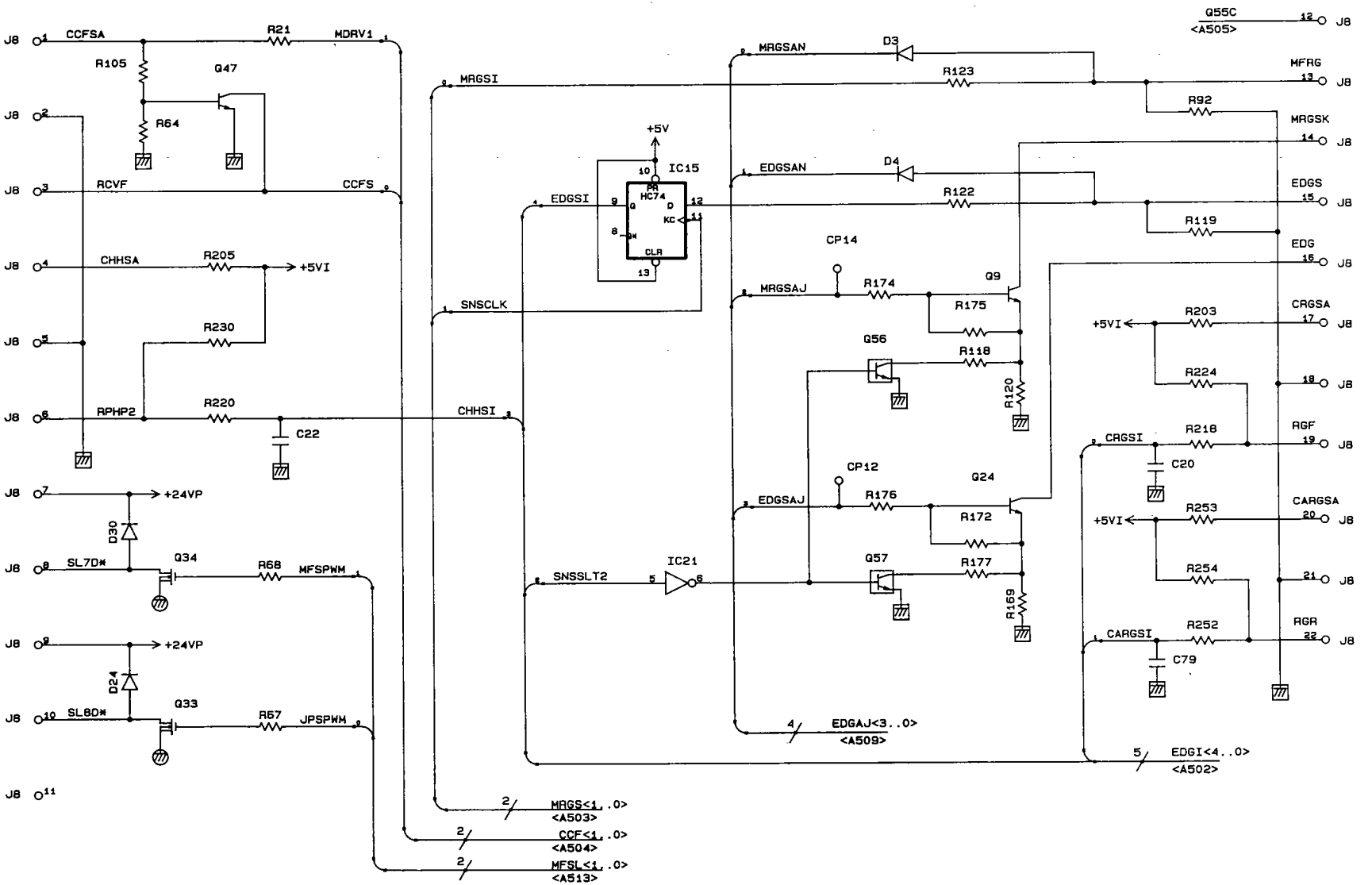
CANON RDF-E1 REV.1 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)



COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.1 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

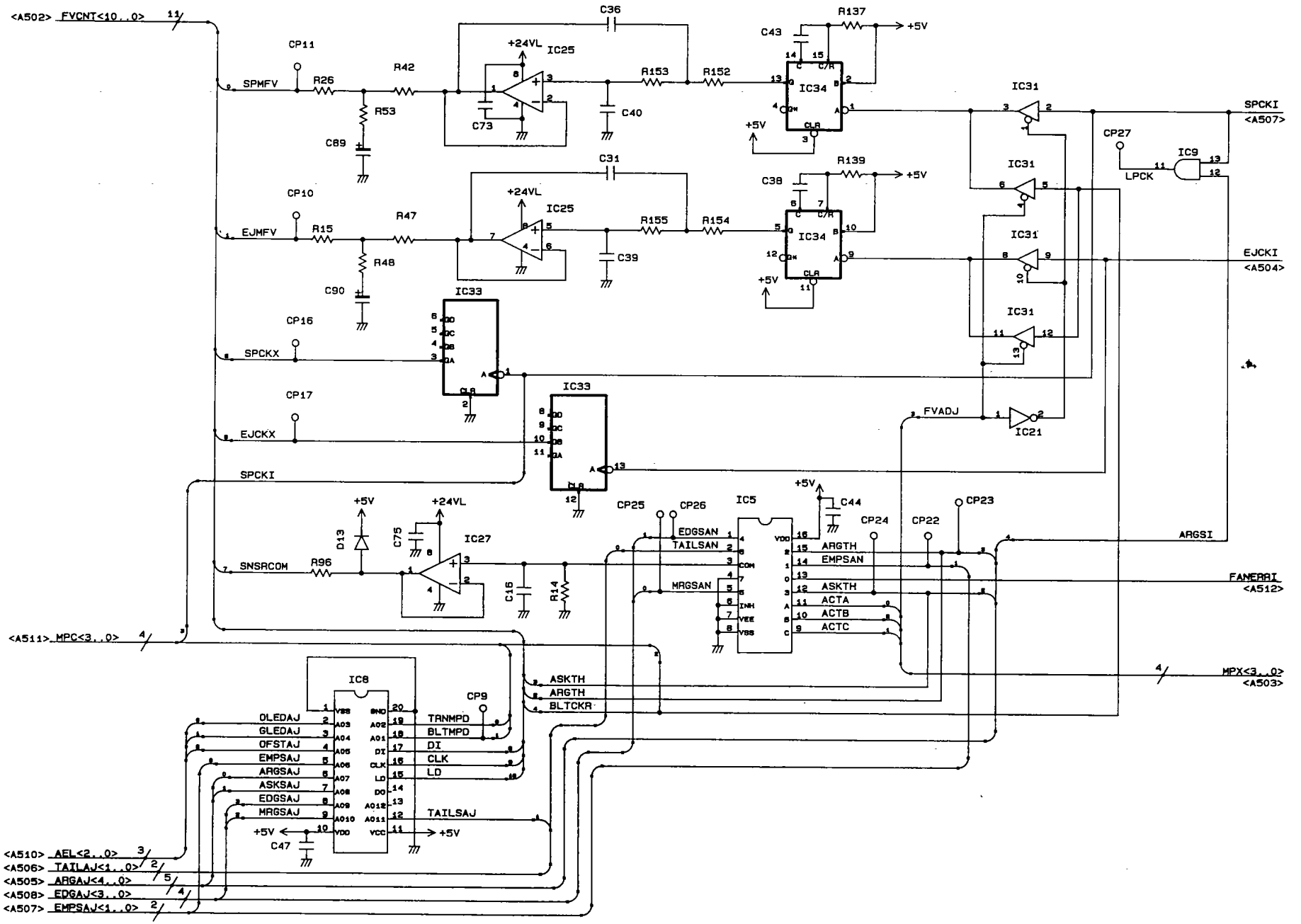


COPYRIGHT © 1996 CANON INC. CANON RDF-E1 REV.1 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)



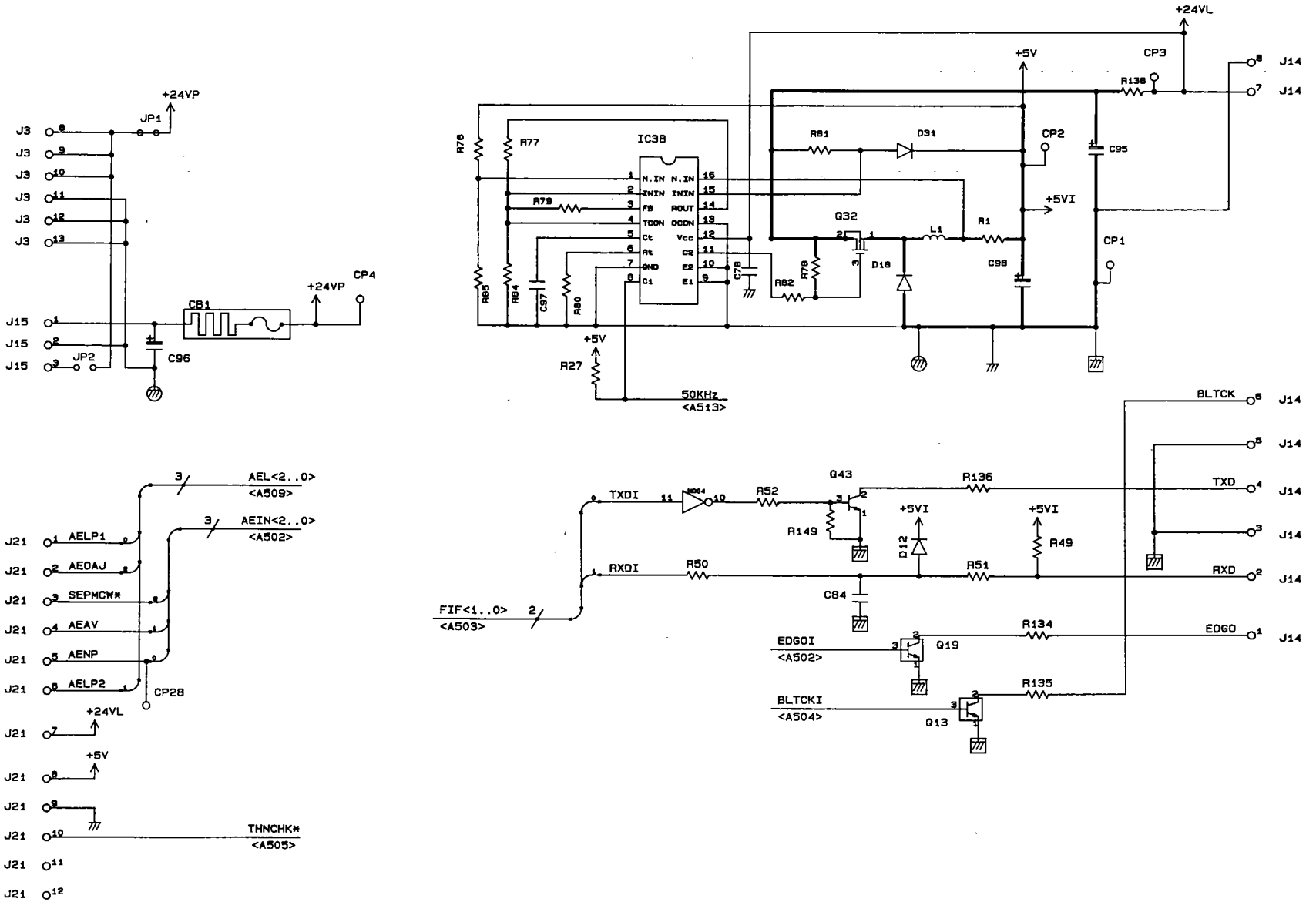
COPYRIGHT © 1996 CANON INC.

RF controller PCB (A509)

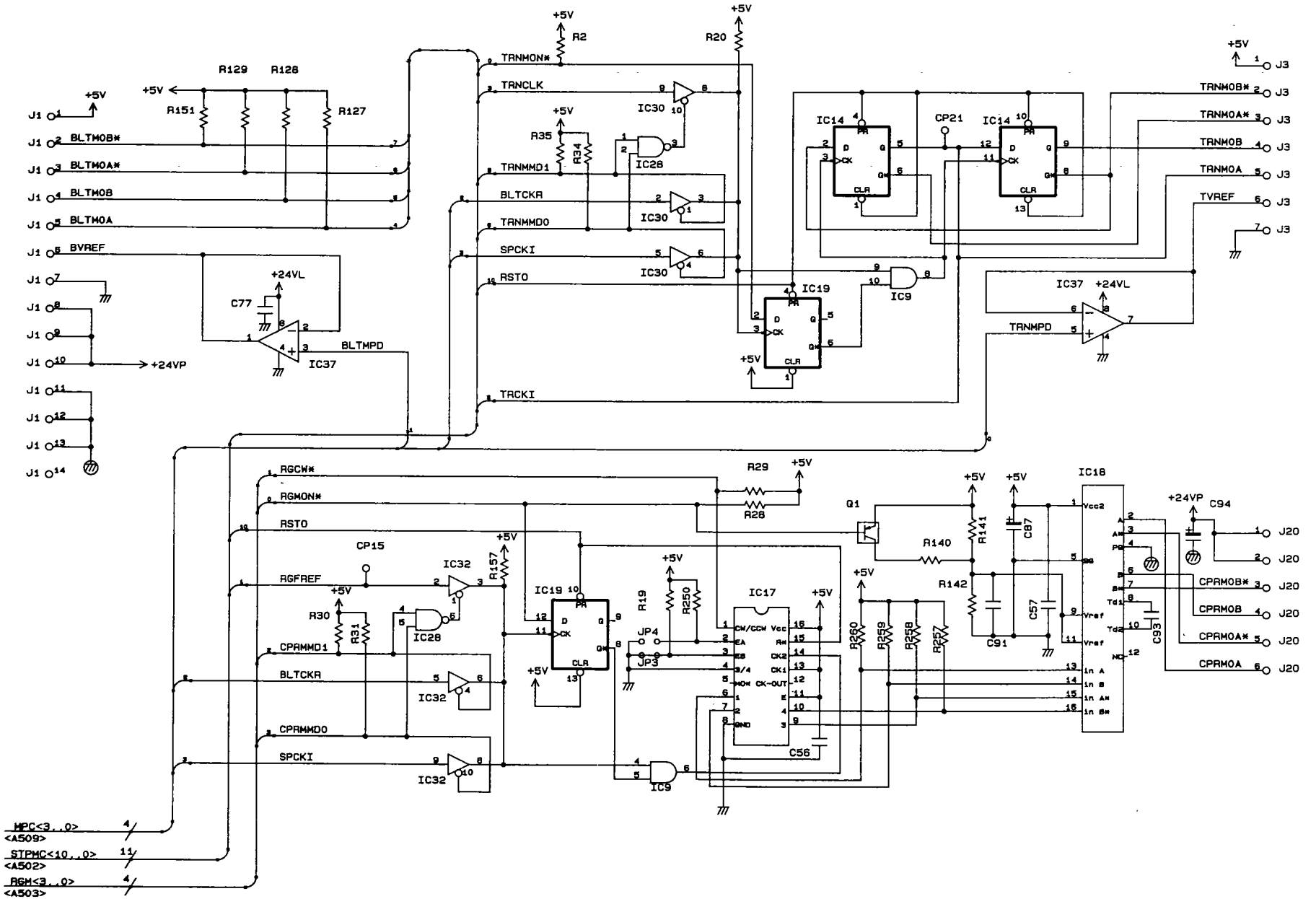


COPYRIGHT © 1996 CANON INC.

CANON RDF-E1 REV.1 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

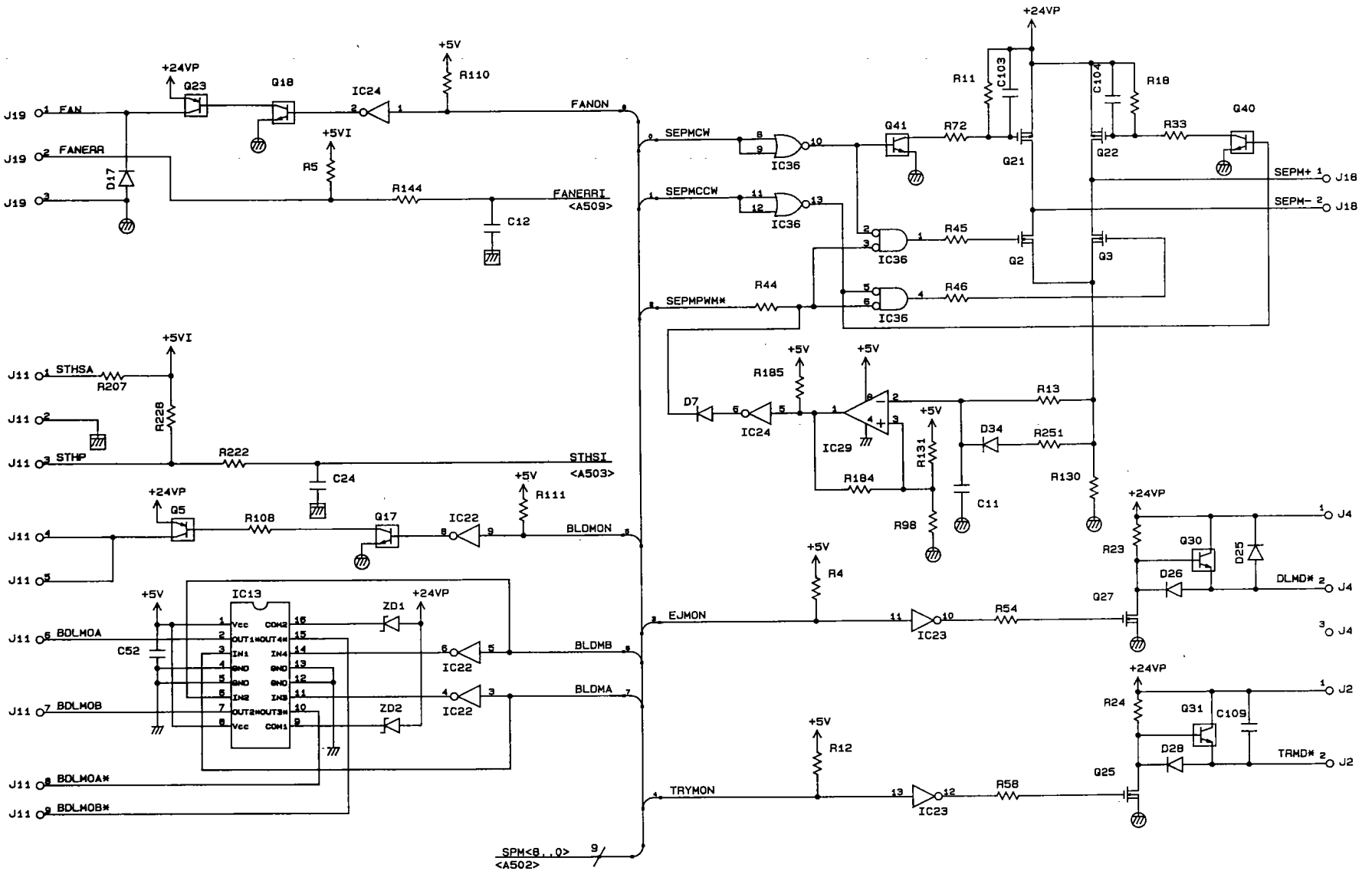


COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.1 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

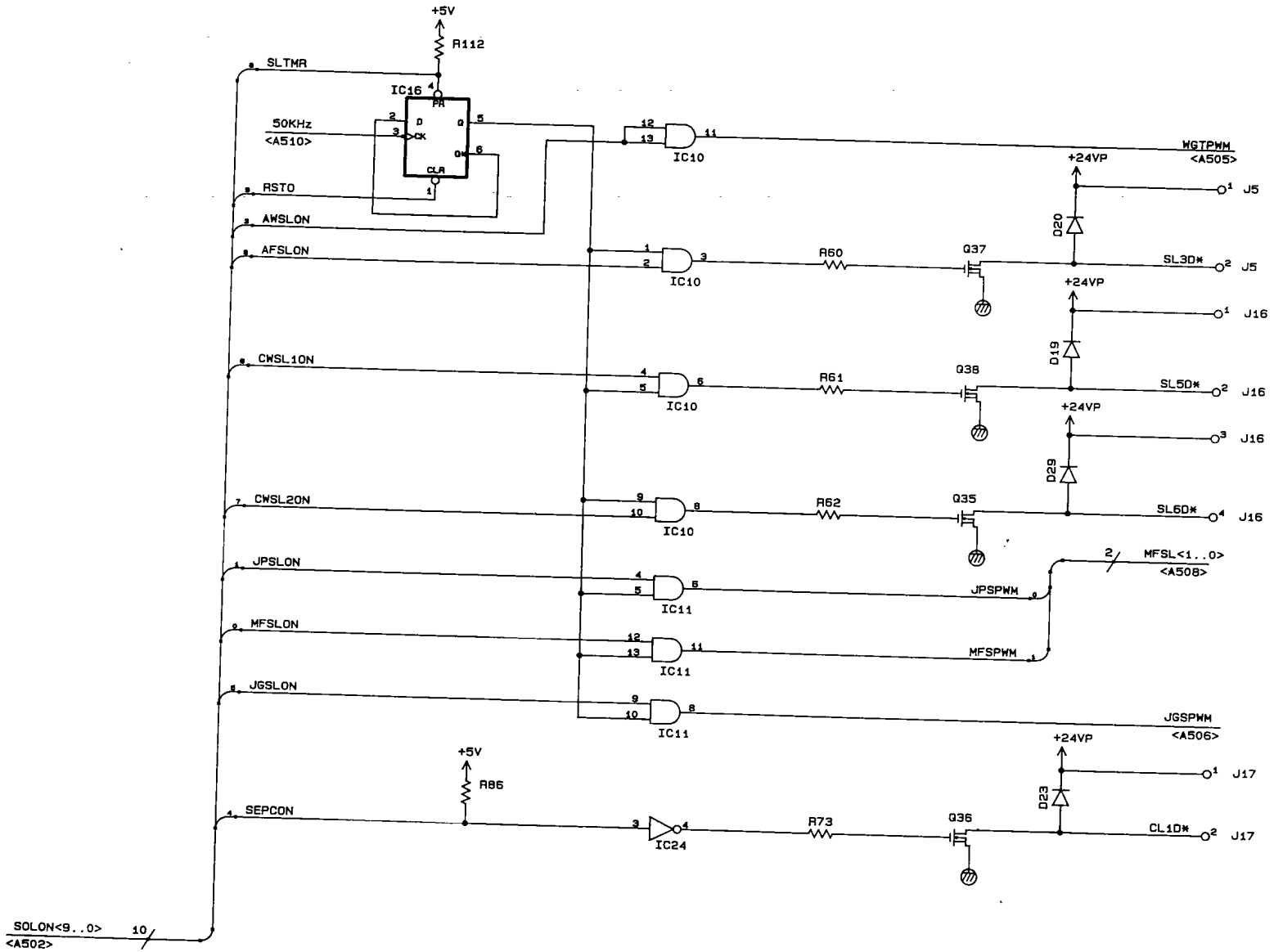


COPYRIGHT © 1996 CANON INC.

CANON RDF-E1 REV.1 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

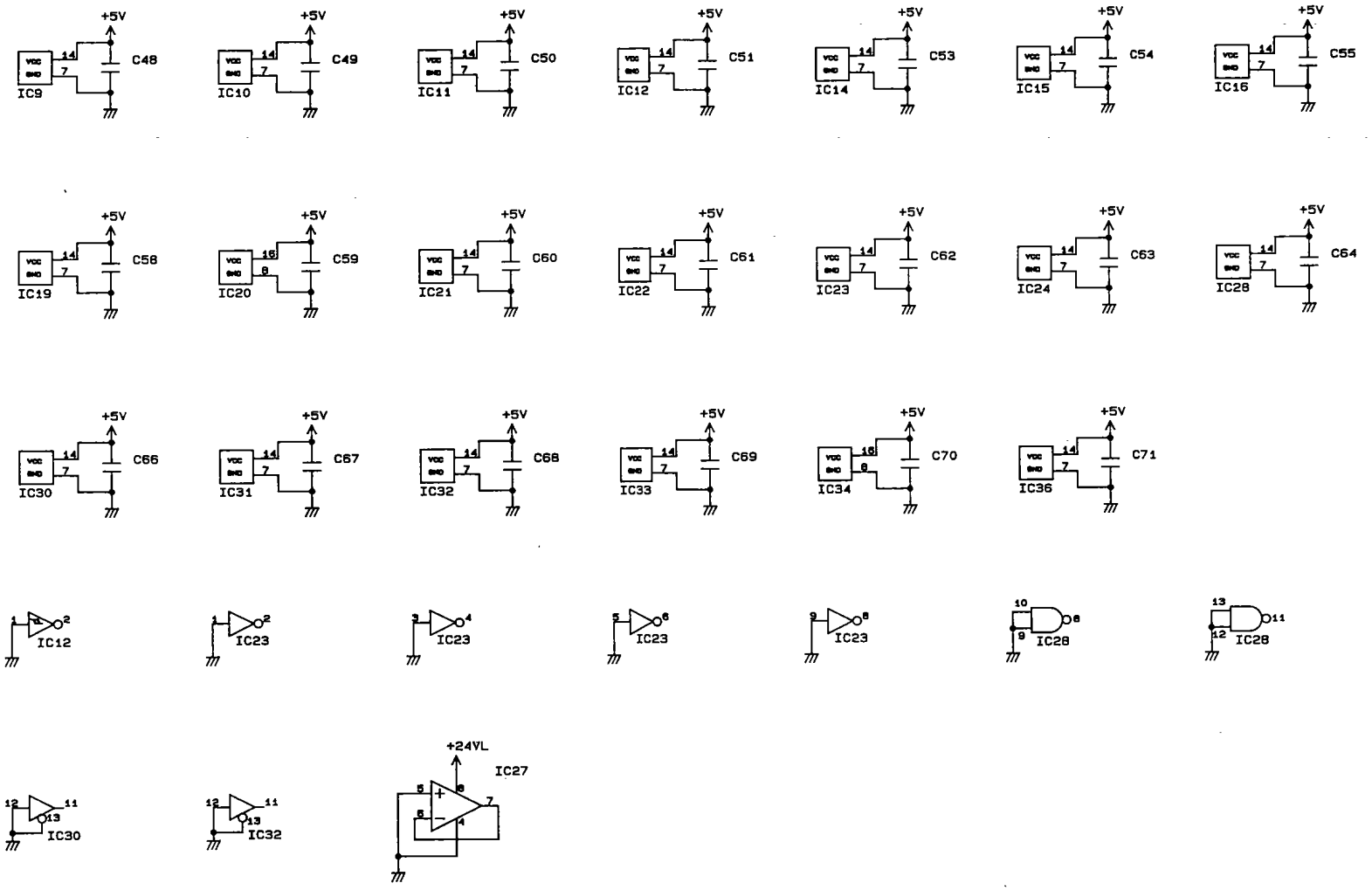


COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.1 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)



COPYRIGHT © 1996 CANON INC.

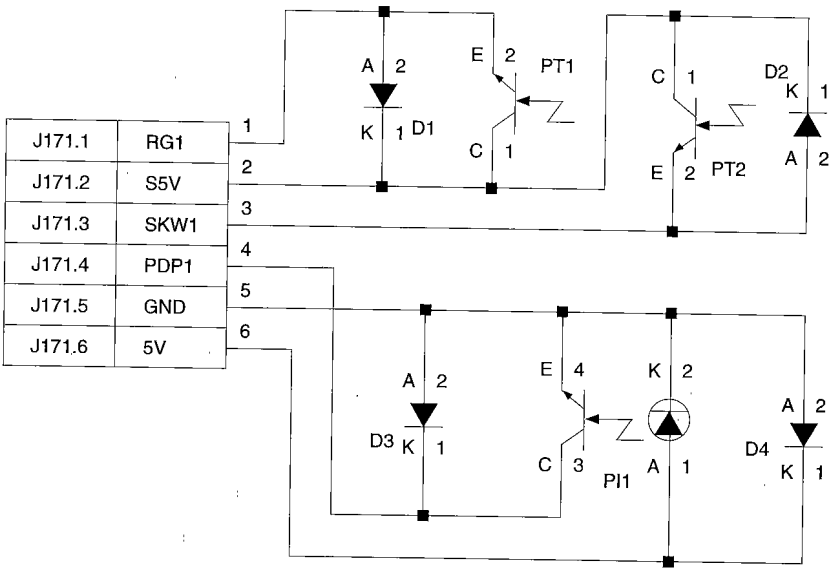
CANON RDF-E1 REV.1 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)



COPYRIGHT © 1996 CANON INC.

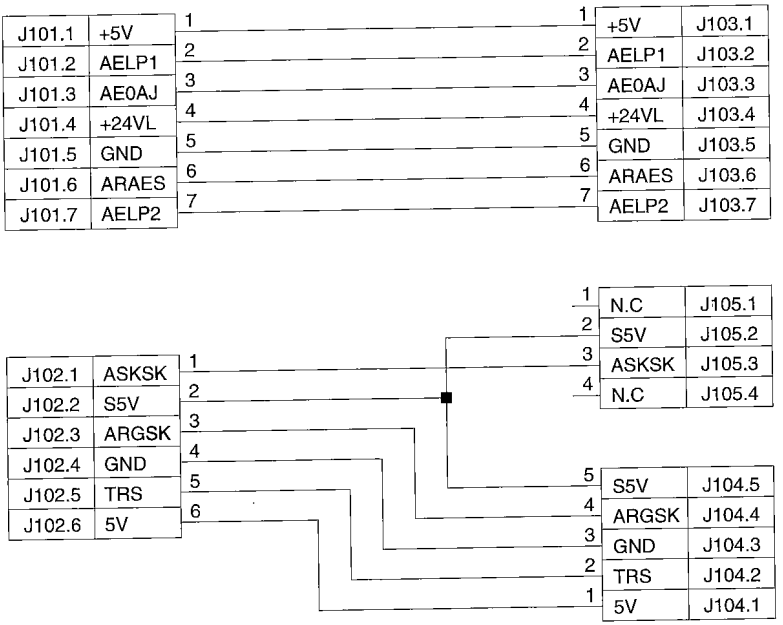
CANON RDF-E1 REV.0 JAN. 1996 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

E. PICK-UP 1 SENSOR PCB CIRCUIT DIAGRAM



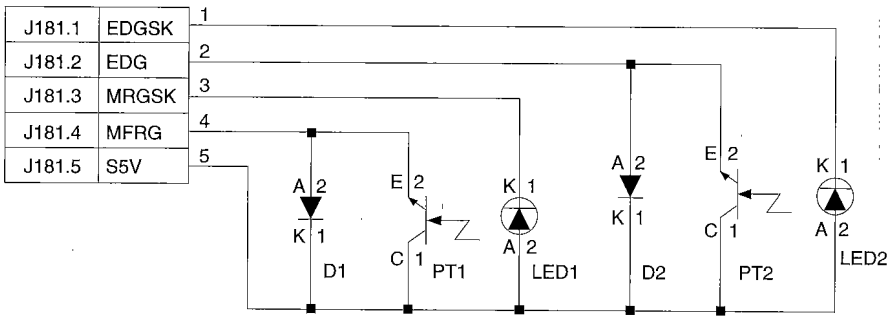
COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

F. HARNESS PCB CIRCUIT DIAGRAM



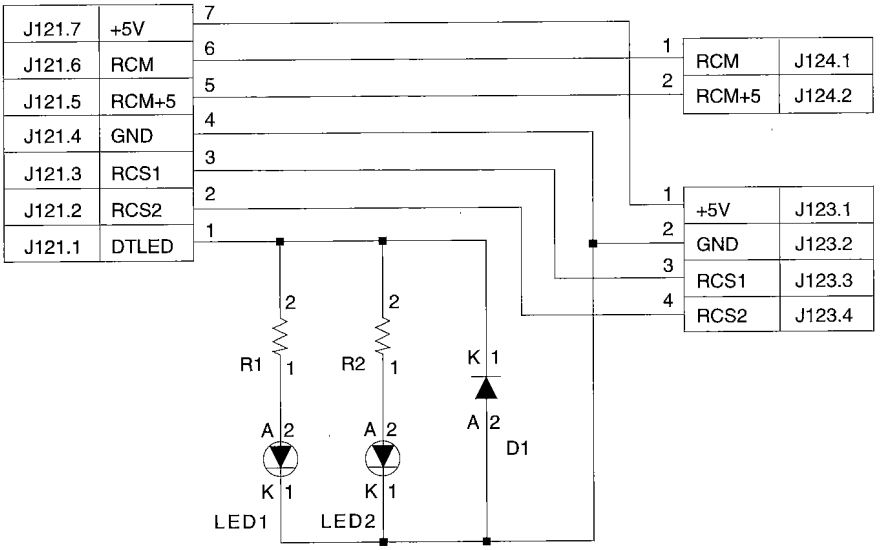
COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

G. IMAGE LEADING EDGE SENSOR PCB CIRCUIT DIAGRAM



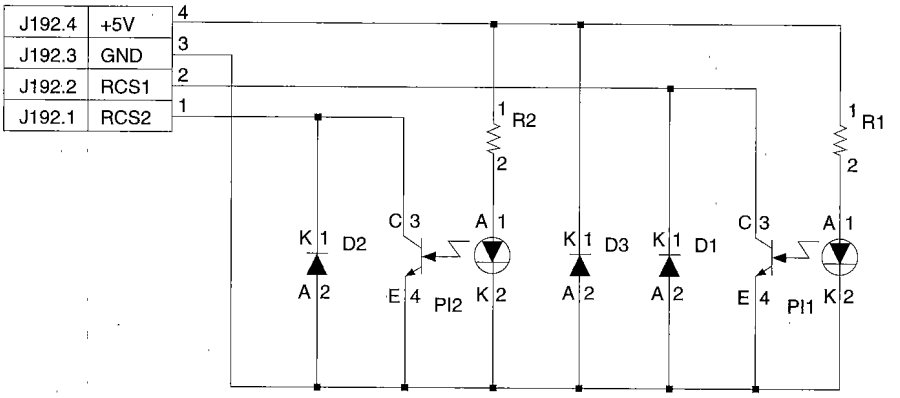
COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

H. INDICATOR LED PCB CIRCUIT DIAGRAM

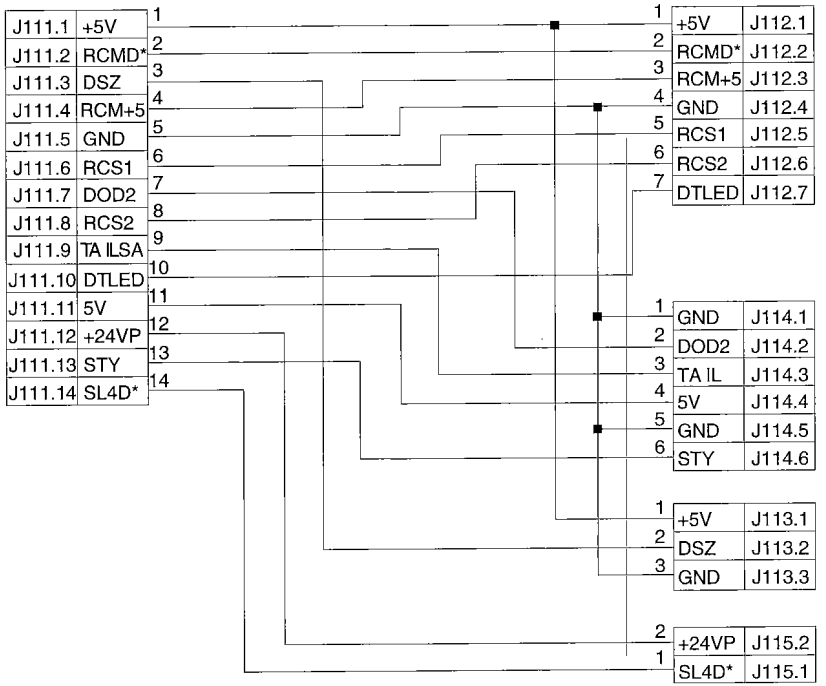


COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

I. RECIRCULATION SENSOR PCB CIRCUIT DIAGRAM

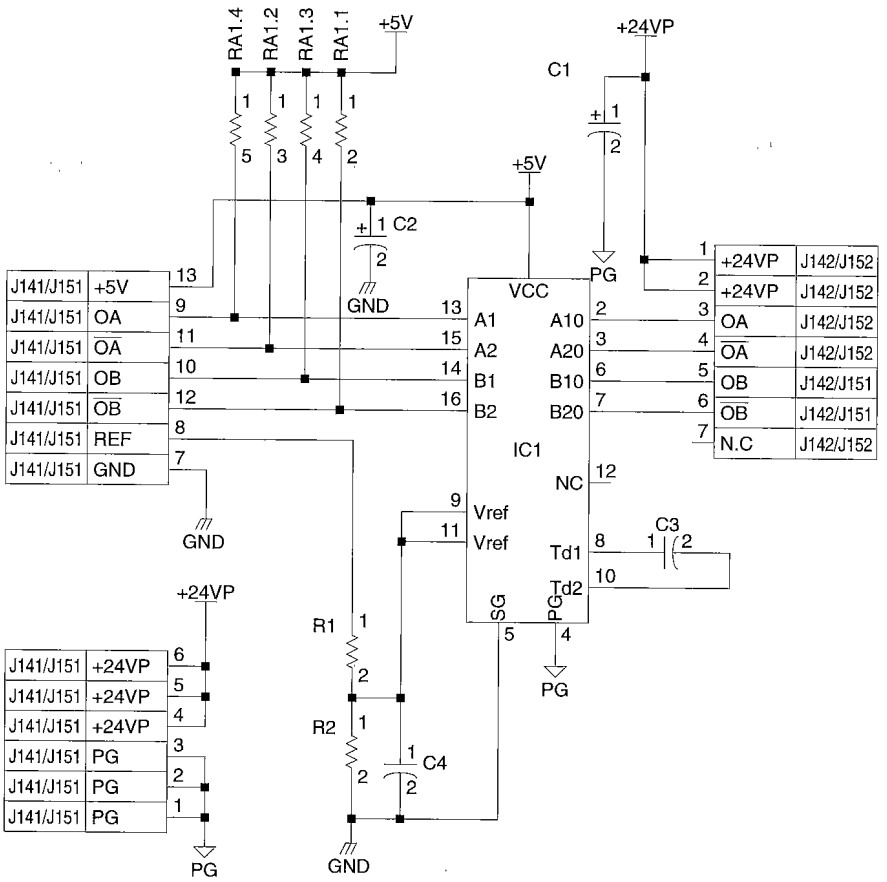


J. TRAY PCB CIRCUIT DIAGRAM



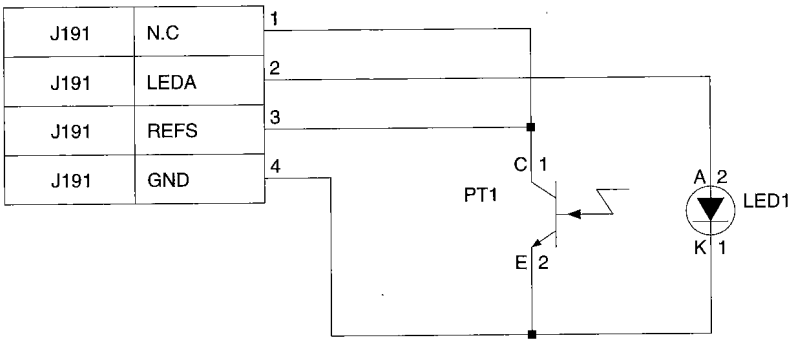
COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

K. BELT MOTOR DRIVER PCB/RECIRCULATION MOTOR DRIVER PCB CIRCUIT DIAGRAM



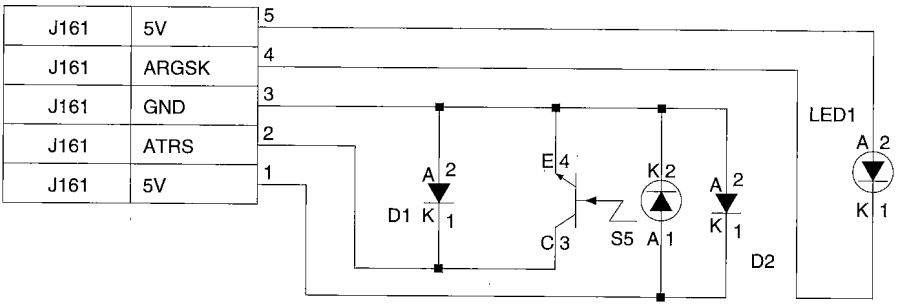
COPYRIGHT © 1996 CANON INC.

L. ORIGINAL 1 SENSOR



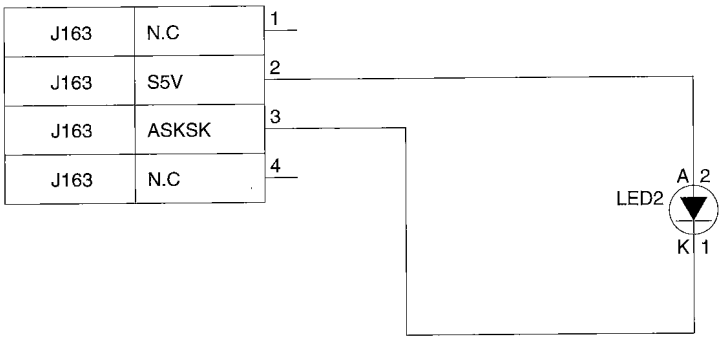
COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

M. SKEW SENSOR LED/REVERSAL SENSOR



COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

N. SKEW SENSOR 1 LED



COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

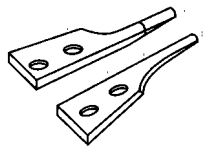
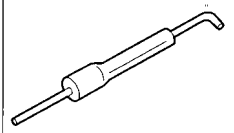
O. SOLVENTS AND OILS

No.	Name	Use	Composition	Description
1	Alcohol	Cleaning; e.g., glass, plastic, rubber, and external covers	Hydrocarbon (fluorine family) alcohol surface active agent water	• Do not bring near open fire. • Procure localy. (isopropyl alcohol)
2	Heat-resisting grease	Lubricating; e.g., sliding parts	Lithium soap (oil family) moblybdenum bisulfide	• Tool No. CK-0427 (500 g/unit)
3	Lubricant	Lubricating	Mineral oil (paraffin family)	• Tool No. CK-0451
4	Cleaning tissue	Cleaning; e.g., feeder belt, copyboard cover, copyboard glass		• Tool No. TKN-0454

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)

P. SPECIAL TOOLS

In addition to the standard tools set, the following will be needed when servicing the machine:

No.	Tool name	Tool No.	Shape	Notation *	Remarks
1	Replacement blade for stop ring pliers	CK-0246		B	For removing stop ring; 4 to 9 mm
2	Tension gauge	CK-0058		B	For adjusting separation belt; 0 to 600 g

*Keep each tool on hard as follows:

A: each service person must have one.

B: each group of five service persons must have one.

C: each workshop must have one.

COPYRIGHT © 1996 CANON INC.
CANON RDF-E1 REV.0 JAN. 1995 PRINTED IN JAPAN (IMPRIMÉ AU JAPON)